JOBENOMICS™

Comprehensive U.S. Labor Force & Employment Report:

Q3 2017

31 October 2017

Jobenomics Comprehensive U.S. Labor Force & Employment Report: Q3 2017

By: Chuck Vollmer

Download Employment, Unemployment and other reports at: http://Jobenomics.com

31 October 2017

Introduction. While highly-advertised U.S. stock market, official unemployment and consumer confidence statistics suggest that the U.S. economy is doing very well, underlying economic, labor force and wage statistics are not doing nearly as well. This dichotomy is discussed in two comprehensive Jobenomics reports published quarterly. Both reports take a deep dive on economic, community, business and workforce statistics, characteristics, challenges and trends.

This 175-page quarterly Jobenomics Comprehensive U.S. Labor Force & Employment Report: Q3 2017 e-book focuses on current U.S. labor force and employment statistics, fastest growing industries and occupations, business and job creation, economic growth, income opportunity, contingent workers, education and training, workfare, and Jobenomics' dozen city and state initiatives.

The top three conclusions of this report are:

1. Near-term labor force and employment outlook is positive.
2. Mid-term labor force and employment outlook is troublesome.
3. Long-term challenges to economic and labor force growth include stemming voluntary workforce departures, dealing with contingent workforce expansion, improving GDP growth, adjusting the population/workforce imbalance, providing better income opportunity and wages, and increasing the number of startup, self-employed, micro and small businesses.

The 110-page Jobenomics U.S. Labor Force & Unemployment Report: Q3 2017 e-book focuses on the current U.S. unemployment and underemployment situation, labor force losses, economic sustainability, income inequality, voluntary workforce departures and the non-working population, welfare, and the small business creation solution.

Table of Contents

Executive Summary

Jobenomics deals with economics of business and job creation. The Jobenomics National Grassroots Movement's goal is to facilitate an environment that will create 20 million new middle-class U.S. jobs within a decade. Jobenomics prioritizes its efforts on citizens at the base of America's socioeconomic pyramid with emphasis on engaging more women, minorities, youth (Gen Z/Y) and the working poor in the business and employment process. While Jobenomics is designed as a U.S. small business and job creation movement, other nations expressed interest in starting similar movements.

Over 20 million people have been reached by Jobenomics via its media, website and lectures, and has garnished wide-spread support for it economic development, workforce development and business development efforts. Jobenomics website (https://jobenomics.com/) and blog (https://jobenomicsblog.com/) now averages 30,000 monthly page views with the majority of viewers spending a half hour or more online, not including the vast amount of research hours spent studying e-books and special reports that is downloaded at no charge (free) from the website.

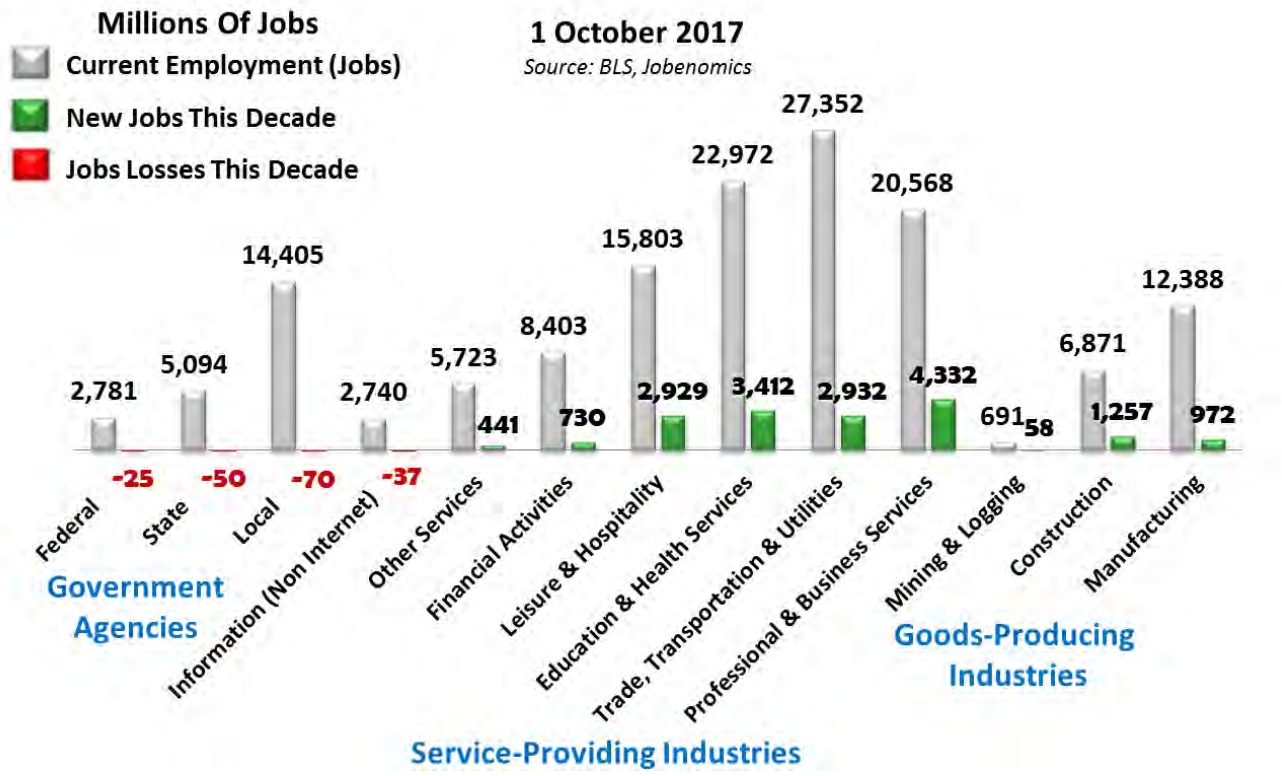
Jobenomics Books and E-Books

Jobenomics books, e-books, and special reports consist of extensive research on economic/business/workforce development, emerging national labor force and urban renewal initiatives, quarterly employment and unemployment analyses, and specialty reports on the U.S. labor force, emerging U.S. and global business and labor force trends, and economic growth, sustainability and security.

While Jobenomics addresses big business and government employment trends, its principal focus is on highly-scalable small and self-employed businesses that employ the vast majority of Americans and create the vast amount of new jobs. Jobenomics has a dozen state and city initiatives that are led by community leaders to mass-produce highly-scalable small businesses and jobs. To accelerate small business creation, Jobenomics is working with community leaders to promulgate local workfare initiatives, implement community-based business generators to mass-produce startup businesses, and provide workforce skills-based training, certification and funding programs.

Current State of the U.S. Labor Force. To fully understand net labor force gains and losses, Jobenomics uses two primary sources of U.S. labor force data: (1) the monthly U.S. Bureau of Labor Statistics (BLS) Employment Situation Summary[1], a monthly summary of all U.S. government and private sector employment, and (2) the ADP National Employment Report[2], a monthly survey of employment by 400,000 U.S. private sector businesses by the ADP Research Institute in collaboration with Moody's Analytics. Dozens of other accredited government and private sector resources are also incorporated and footnoted. A total of 189 footnotes are included in this document for the express purpose of guiding readers and helping evaluate and formulate their own conclusions.

Current U.S. Nonfarm Employment, Job Gains and Job Losses



This chart is a snapshot of the current state of the U.S. labor force. Current jobs are highlighted in gray, new jobs in green and job losses in red.

In general terms, the U.S. labor force is in a much better position today than it was in during the Great Recession. Seven private sector service-providing industries employ 71% of all U.S. workers (104,242,000) jobs, followed by federal, state and local governments that employ 15% of the workforce (22,337,000) jobs, and by three private sector goods-producing industries that employ 14% of the workforce (20,079,000). Job gains occurred in 9 out of 10 private sector industries this decade. The non-Internet Information sector is the only private sector industry that lost jobs. Job losses occurred at all three levels of government (federal, state and local) this decade.

[1] BLS, Employment Situation Summary, 6 October 2017, https://www.bls.gov/news.release/empsit.nr0.htm
[2] ADP, http://www.adpemploymentreport.com/

Positive Labor Force Trends. Employment and economic data were positive over the last quarter. Three noteworthy areas are: net labor force gains and losses, private sector industry growth, and continued positive (but weakening) small business employment contributions.

U.S. Labor Force Gains and Losses Since 2000

as of 1 October 2017

	Working Population	Non-Working Population		Net Labor Force Gains-Losses
	Employment Gain/Loss	Not-in-Labor Force Gain/Loss	Unemployed (U3) Gain/Loss	
Last Month (September 2017)	(33,000)	(368,000)	(331,000)	666,000
Post Recession (Jan 2010-Present)	16,881,000	10,604,000	(8,297,000)	14,574,000
Since Year 2000	15,878,000	25,762,000	1,148,000	(11,032,000)
	BLS CES Report (CES0000000001) Table B-1 Seasonally Adjusted	*BLS Not-in-Labor-Force Report (LNS15000000) Seasonally Adjusted*	*BLS Unemployed Report (LNS13000000) Table A-10*	

- **Labor Force Gains and Losses.** As highlighted in yellow above, while the United States has made steady workforce gains during the post-recession recovery era, the U.S. labor force is still 11,032,000 workers weaker today as compared to year 2000. This weakness is exacerbated by population growth of 43 million additional Americans today compared to 2000 (282 million versus 325 million). Fortunately, the last three quarters have posted some of the strongest net labor force gains so far this decade as highlighted in green.
- **Private Sector Industry Growth.** Private sector Service-Providing industry employment continues to grow. 86.6% of all new jobs this decade were created by the seven private sector's service-providing industries. 79.9% of all new jobs were produced by the four leading service-providing industries (Professional & Business Services; Education & Health Services; Trade, Transportation & Utilities; and Leisure & Hospitality). Manufacturing and Construction contributed 5.7% and 7.4%, respectively. The three Government sectors lost 145,000 jobs this decade.
- **Small Business Labor Force Contributions.** Small business is the engine of the U.S. economy—a fact that is generally underappreciated by American policy-makers and the public. 77.2% of all Americans are now employed by small businesses that created 73.1% of all new jobs this decade. So far this decade (Q1 2010 through Q3 2017), small business (less than 500 employees as defined by the Small Business Association) created 2.8-times as many jobs as large businesses (500+ employees). During the same period of time, so-called "mom and pop" micro business (less than 20 employees) created almost (90%) as many jobs as very large multinational corporations with over 1000 employees.

Negative Labor Force Trends. Positive labor force trends are offset by six negative trends that threaten economic growth and stability. These trends include voluntary workforce departures, contingent workforce expansion, sclerotic GDP growth, population/workforce imbalance, low wages/income and declining business startups.

- **Small Business Decline and Faltering Startups.** While small business is the engine of the U.S. economy, the rate of startup businesses and small business job creation is dropping rapidly. Small business job creation has dropped 40% in relation to big business since 2007. Micro-business job creation has dropped by 60% since the post-recession peak in April 2011. In terms of new starts (firms less than 1-year old), the BLS reports that the United States is now creating startup businesses at historically low rates, down from 16.5% in the 1980s of all firms to 8% today.[3] Based on a Wall Street Journal (WSJ) analysis of this recently released BLS report's data, "If the U.S. were creating new firms at the same rate as in the 1980s that would be the equivalent of more than **200,000 companies and 1.8 million jobs a year**."[4] The WSJ also reports that the share of employment at firms less than 1-year old has slipped from nearly 4% to about 2% of private-sector jobs from the 1980s to today. Business startups are the seed corn of the U.S. economy. Without the planting and fertilization of these seedlings the fields of American commerce would remain fallow.

- **Voluntary Workforce Departures.** As shown on the U.S. Labor Force Gains and Losses chart, since year 2000, 25,762,000 adult workers voluntarily departed the U.S. labor force. Able-bodied (capable of working) adults who have no job and are no longer looking for a job are accounted by the BLS in the Not-in-Labor-Force category. From 2000, the Not-in-Labor-Force cadre grew from 68,655,000 to 94,417,000, a 38% increase equating to tens of millions more citizens who are often dependent on public/familial assistance. Today, citizens in the Not-in-Labor-Force exceed those enrolled in the Total Unemployed (U6) category by 7.1-times and 13.5-times the number in "Officially" Unemployment (U3) category. This great disparity is rarely addressed by policy-makers, analyzed by decision-makers or mentioned by the media's talking-heads, all of whom focus almost entirely on the Official U3 Unemployment Rate that is now at a post-recession low of 4.2%.

- **Contingent Workforce Expansion.** Contingent workers are defined by the U.S. government as "nonstandard" workers who work part-time by necessity (temporary and day workers) or by choice (freelancers, independent contractors and the self-employed). Today, the contingent workforce is approximately 60,000,000 employed Americans or 40% of the total employed workforce. By 2030, this number will grow to 90,000,000 or 50% of the U.S. employed workforce—a trend that is largely unknown to U.S. policy-makers and the American public.

- **Sclerotic GDP Growth.** Most economists believe that economic growth depends on employment and GDP growth. Any GDP growth below 2% is considered sclerotic growth that makes the U.S. economy vulnerable to financial downturns. According to the U.S. Bureau of Economic Analysis (BEA), during the post-recession recovery period from Q1 2010 through Q2 2017, U.S. GDP averaged 2.3%. In 2015 and 2016, U.S. GDP grew by subpar rates of 2.0% and 1.9% respectively. During the first three quarters of the Trump Administration, GDP averaged 2.4%. However, the last two quarters have posted 3.1% and 3.0% (advance estimate) gains.

---

[3] BLS, Business Employment Dynamics Summary, 27 January 2016, Table 8, Private sector establishment births and deaths, seasonally adjusted, http://www.bls.gov/news.release/cewbd.t08.htm

[4] Wall Street Journal, Sputtering Startups Weigh on U.S. Economic Growth, 23 October 2016, http://www.wsj.com/articles/sputtering-startups-weigh-on-u-s-economic-growth-1477235874?mod=djem10point

- **Population/Workforce Imbalance.** As of 1 October 2017, out of a U.S. population of 326 million, 124 million private sector workers support 31 million government workers and contractors, 94 million able-bodied people who can work but chose not to work, 64 million who cannot work, and 14 million unemployed and underemployed. The U.S. economy is not sustainable with only 38% supporting an overhead of 62%. The growing contingent labor force, which consists of mostly lower paid wage earners, makes the overhead burden even more precarious. More people earning livable wages and having greater discretionary income must be productively engaged in the labor force for the U.S. economy to flourish.
- **Low Wages/Income.** According to the U.S. Census Bureau, Current Population Survey, 2017 Annual Social and Economic (ASEC) Supplement, out of a total of 165 million American workers 15-years old and over with earnings, 72% (119 million) were below mean income and 28% (46 million) were above mean income of $59,817 for full-time workers. If the 162 million citizens with no reported income were included, an astounding 86% of Americans make below average (mean) income. This imbalance is much larger than most people currently perceive and a major contributor to the social unrest being exhibited today.

Jobenomics Q3 2017 Assessment. While recent labor force gains have been positive, negative employment trends, coupled with the next financial downturn, threaten the U.S. economy and its labor force. From a Jobenomics perspective, job creation is the number one issue facing the U.S. in regard to economic growth, sustainment and prosperity. Jobs do not create jobs, businesses do, especially small businesses. Unfortunately, America is focused on big business and government employment solutions that have not been very effective growing the U.S. labor force.

Jobenomics is a strong advocate of big business and believes that a robust industrial base is paramount to American prosperity and security. Big business, the anchor tenant of the U.S. economy, is on an opposing track regarding job creation and is unlikely to create a significant amount of net new jobs in the foreseeable future due to automation of routine manual and cognitive tasks, foreign outsourcing and increased usage of domestic contingent workers.

Government can play a significant support role in small business creation, especially if they underwrite the mass-production of highly-scalable startups in the same way they supported the homebuilding and mortgage industries over the last fifty years via a number of government sponsored enterprises like Fannie Mae, Ginnie Mae and Freddie Mac.

Small business creation is unquestionably the best way to create tens of millions of new jobs. Not only is this true during today's post-Great Recession recovery period, but during the Great Recession. Unfortunately, as a percentage of total job creation, small business job production has been dropping as shown. Until recently, this drop was mainly due to a weakening small business sector that is woefully neglected by the American policy-makers and financial institutions.

The U.S. economy cannot be sustained by 124 million (38%) private sector workers supporting an overhead of 202 million (62%) government and under/unemployed citizens. More people must be productively engaged in the labor force for the U.S. economy to flourish. A vibrant labor force

depends on a well-trained, disciplined, and engaged labor force. The antidote to unemployment and voluntary workforce departures is employment and meaningful career opportunities.

New small, emerging and self-employed businesses could create 20 million new jobs within a decade, if properly incentivized and supported. Three prominent areas of focus are: filling 6.2 million unfilled U.S. job openings, and exploiting the 10s of millions of new jobs generated by Energy Technology and Network Technology Revolutions. If Jobenomics can help create thousands of highly-scalable small businesses, America writ-large can facilitate the creation of millions of small businesses that would transform our economy.

If American policy-makers and decision-leaders are serious about revitalizing the economy and reversing the eroding middle-class, they must aggressively grow the labor force, reduce voluntary workforce departures, and address contingent workforce and below mean income issues. As discussed herein, Jobenomics believes that the place to start is with demographics with the greatest need and potential (i.e., women, minorities, new workforce entrants and the growing cadre of poor white males). Jobenomics suggests that policy-makers, in both parties, should make solutions to these labor force challenges their top priority.

Jobenomics Overview and Strategic Outlook

Jobenomics deals with economics of business and job creation. The Jobenomics National Grassroots Movement's goal is to facilitate an environment that will create 20 million new middle-class U.S. jobs within a decade. The Movement has a following of an estimated 20 million people via media, social media, lectures and the website/blog. Jobenomics reports include this quarterly employment analysis, a quarterly unemployment analysis, and specialty reports on the U.S. labor force and emerging business trends and economic security.

While Jobenomics addresses big business and government employment trends, its principal focus is on highly-scalable small and self-employed businesses that employ the vast majority of Americans. Jobenomics has a dozen state and city initiatives that are led by local leaders to mass-produce highly-scalable small businesses and jobs in their respective communities. To accelerate small business creation, Jobenomics is working with community leaders to identify local community initiatives and the implementation of community-based business generators to mass-produce microbusinesses and to provide workforce skills-based training and certification programs.

To understand the strategic relationship between jobs and economics (Jobenomics), one must consider (1) the nexus between jobs and GDP, (2) the vital importance of the private sector labor force, (3) the balance between the working and non-working populations, (4) labor force gains versus labor force losses, and (5) the criticality of small business on job creation.

The Vital Importance of the Private Sector Labor Force. Today, 38% of all Americans financially support the rest of the country.

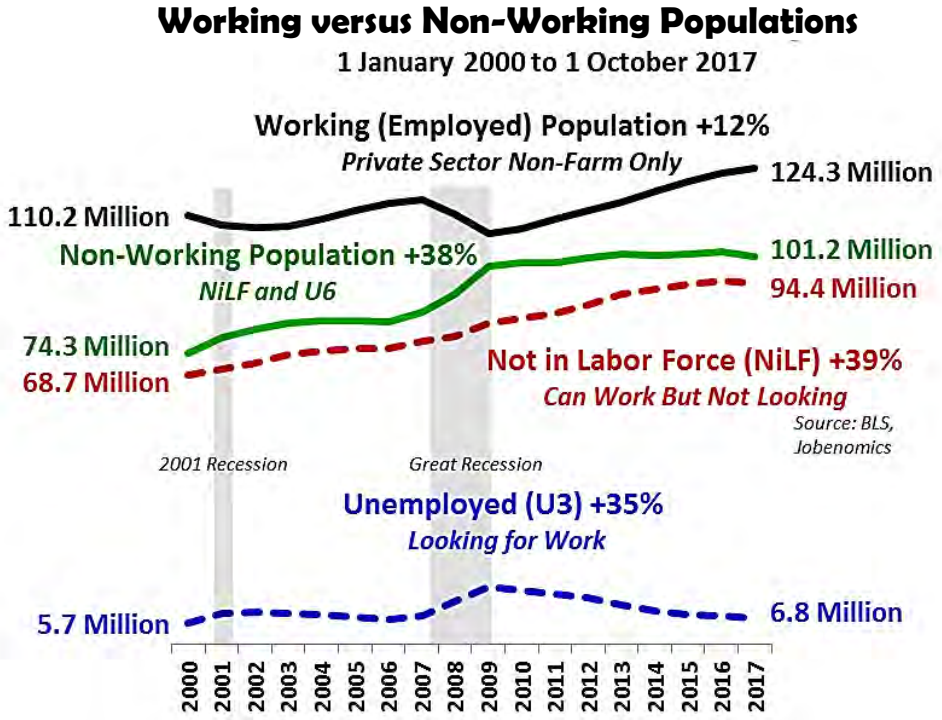
The ever growing contingent labor force, which consists of mainly lower paid wage earners, makes the overhead burden of the private sector labor force even more precarious. More people with livable wages and greater discretionary income must be productively engaged in the private sector labor force for the U.S. economy to flourish.

Today, Jobenomics estimates the contingent workers (part-time, self-employed, independent contractors, temporary workers, on-call and day laborers with "alternative" or "nonstandard" work

agreements) to be 60,000,000 employed Americans or 40% of the total employed workforce (private sector and government). By 2030, this percentage will rise to over 50%.

The U.S. economy cannot be sustained by 38% of the working population supporting an overhead of 63% of the able-bodied adult non-working population and citizens who cannot work, such as children, elderly and the disabled. To make matters worse, 40% of the workforce is part of the growing contingent labor force that is replete with lower paid wage earners with benefits associated with standard work agreements. More people with livable wages and greater discretionary income must be productively engaged in the private sector labor force for the U.S. economy to flourish.

The Balance between the Working and Non-Working Populations. To get a strategic snapshot of the state of the U.S. labor force, one must compare the Working Population (Employed) against the Non-Working Population (Unemployed and Not-in-Labor-Force).

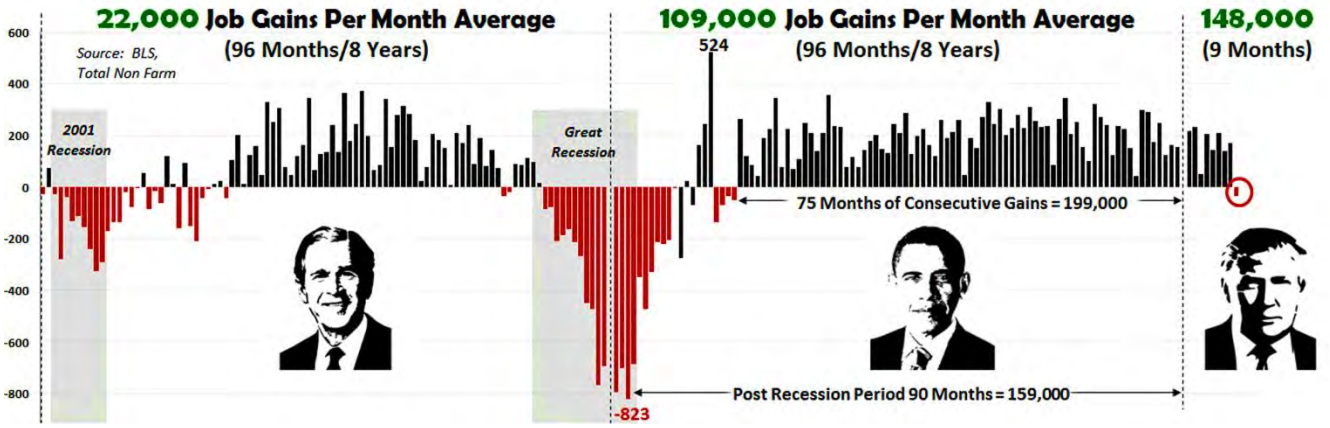


From 2000, the Working (Employed) population rose by 12% compared to the Non-Working Population rise of 38%. Jobenomics defines the Non-Working Population as Not-in-Labor Force (that rose by 39%) and the U3 Officially Unemployed (which is still 35% higher today than year 2000).

If these trends continue, Jobenomics predicts that the U.S. Not-in-Labor-Force will equal the Employed population if the United States suffers a financial downturn or crises that have occurred regularly in previous decades. Small business expansion is the best antidote for mitigating any future financial crisis, as well as providing the biggest bang for the buck in strengthening the U.S. labor force, growing the economy and stemming the erosion of the American middle-class.

Labor Force Gains versus Labor Force Losses. Most Americans assume that a good economy creates jobs. This is a backward assumption. Good jobs create an economy.

Jobs Gains/Losses Since 2001



The question that policy-makers, pundits and the general public really want to know is how does the latest job creation number compare to past history? As shown, since 2001, the job creation high water mark of 524,000 monthly new jobs was achieved in May 2010, and the low water mark for jobs losses was 823,000 in March 2009. The average monthly number of new jobs from January 2001 to October 2017 was a measly 63,000 job gains per month (not shown) that adversely impacted the U.S. economy and hollowed out the American middle class. From an Administration standpoint,

- The Bush Administration (2001 to 2008) created an average of only 22,000 new jobs per month, due to the onslaught of two major recessions, the calamity of 9/11 and the United States' expensive mobilization for the global war on terrorism.

- The Obama Administration (2009 to 2016) created an average 109,000 job gains per month. If the six months of the Great Recession that Obama "inherited" was subtracted, the average of the ensuing 90-month period yielded an average of 159,000 new jobs per month. Perhaps, the greatest legacy of the Obama Administration is 75-months of consecutive job gains (the longest run since WWII) averaging 199,000 jobs per month during a period where the U.S. economy grew at a sclerotic rate of only 1.5%.

- The Trump Administration continued the positive job creation trend with 8 consecutive months of job gains until last month, which ended the 83-month run of job gains with a loss of 33,000 jobs that was precipitated by the devastation caused by three major hurricanes. (Note: the 33,000 job loss was a preliminary estimate that was recently revised to a gain of 18,000. See https://jobenomicsblog.com/ for monthly updates)

  To date, the Trump Administration is averaging 148,000 job gains per month, which hopefully is only a speed-bump in President Trump's efforts to create 25 million new jobs over the next decade. Jobenomics considers these job losses as a "speed-bump" since the overall economy (GDP) is slowly improving, recovery operations will recoup many of the hurricane-related job losses, and more sidelined and unemployed people are now looking for work. In addition, if Washington revamps the tax code as promised, businesses will be motivated to reinvest in America and hire more American workers.

To achieve President Trump's goal of creating 25 million new jobs over the next ten years, the Administration needs to generate 211,955 new jobs per month. To compensate for good and bad months, 250,000 jobs per month is a reasonable standard that is accepted by most economists to compensate for workforce downturns and create a workforce that will produce enough goods and services to grow GDP. During the recent 83-month run of job gains, the 250,000 job gain standard was exceeded 20-times, or nearly one out of every four months. So, increasing the job creation threshold to 250,000 is an achievable goal, especially if more attention is proffered to small business creation.

29.6 million U.S. small businesses employ the majority of all Americans and created the majority of all new U.S. jobs this decade. The Republican-controlled U.S. House of Representatives should soon release their version of the "Tax Cuts and Jobs Act" that chops the corporate tax rate from 35% to 20% on incorporated small business and reduces the tax rate form 39.6% to 25% for unincorporated "pass through" businesses (sole proprietorships, partnerships, and S-Corporations that pay taxes based the owner's personal income tax returns). **If each of these 29.6 million small businesses created or hired only one (1) net new employee over the next several years, Trump's 25 million new jobs goal could be realized in a much shorter timeframe than currently envisioned.**

From a Jobenomics standpoint, **job gain/loss statistics are important, but they are only a prelude to a much more important question regarding net labor force gains and losses**. As will be discussed in detail in this report, the U.S. labor force consists of approximately 250 million citizens (called the civilian noninstitutional population) who are working, unemployed, and able-bodied adults who can work but choose not work for a multiplicity of reasons.

Labor Force Gains and Losses

as of 1 October 2017

	Working Population	Non-Working Population		Net Labor Force Gains-Losses
	Employment Gain/Loss	Not-in-Labor Force Gain/Loss	Unemployed (U3) Gain/Loss	
Last Month (September 2017)	(33,000)	(368,000)	(331,000)	666,000
Trump Era (Jan 2017-Present)	1,334,000	(685,000)	(728,000)	2,747,000
Last Year	1,777,000	(91,000)	(1,103,000)	2,971,000
Post Recession (Jan 2010-Present)	16,881,000	10,604,000	(8,297,000)	14,574,000
Obama Era (2009-2016)	10,479,000	14,722,000	(3,757,000)	(486,000)
Bush II Era (2001-2008)	2,115,000	9,892,000	5,652,000	(13,429,000)
Since Year 2000	15,878,000	25,762,000	1,148,000	(11,032,000)
	BLS CES Report (CES0000000001) Table B-1 Seasonally Adjusted	*BLS Not-in-Labor-Force Report (LNS15000000) Seasonally Adjusted*	*BLS Unemployed Report (LNS13000000) Table A-10*	

In September 2017, the Working Population degraded by a total of 33,000 jobs and the Non-Working Population improved with 368,000 fewer people enrolled in the Not-in-Labor-Force (a BLS category of for people who can work but choose not to work) and 331,000 fewer unemployed citizens. The reduction in the Not-in-Labor-Force category is a positive indication that citizens sidelined from working due to frustration, welfare, retirement, education, etc., are now rejoining the workforce. The BLS also reported that the Official U3 Unemployment rate dropped from 4.4% to 4.2% a post-recession low. From a historical unemployment rate perspective, the post-WWII low was 2.5% in

June 1953, followed by 3.4% in May 1969 and 3.8% in April 2000. As highlighted in green, the **net labor force gain** in September was 666,000, which is the silver lining in the latest BLS' Employment Situation Summary report.

During the 9-months (January through September 2017) of the **Trump Administration**, Working Population gains amounted to 1,344,000 workers, for an average of a little over 148,000 per month, which is below the desired threshold of 250,000 jobs per month. However, the Not-in-Labor-Force and U3 Unemployment categories recorded positive reductions of 685,000 and 728,000 respectively. The Trump Administration **net labor force gain** equates to 2,747,000 over the first 9-months of President Trump's first term in office. This 9-month net gain of 2,747,000 compares very favorably with the Obama Administration's 8-year labor force net loss of 486,000 and the GW Bush Administration's 8-year devastating workforce net loss of 13,429,000. However, it is too early to tell if Trump's favorable statistics will stand up to the test of time.

Since the **end of the Great Recession**, from 1 January 2010 to 1 September 2017, the U.S. labor force net gain was 14,574,000 workers. 16,881,000 new workers entered the labor force. 8,297,000 workers departed unemployment rolls. Unfortunately, a corresponding number of citizens joined the ranks of the Not-in-Labor-Force that rose by 10,604,000 citizens. To the general public, pundits (mainly the Obama Administration, Democrats and media) spun this decrease of 8,297,000 unemployed personnel as a sign of a rapidly improving economy and largely ignored the fact that over 10 million citizens voluntarily departed the labor force to pursue alternative non-working lifestyles, such as welfare, education and the illicit/underground economy

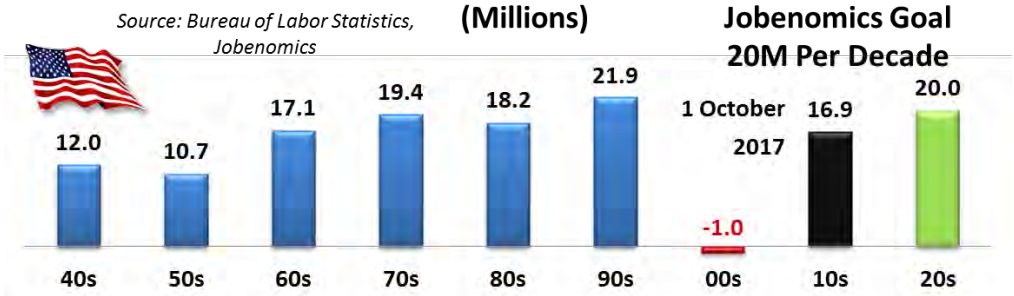
During the 8-years/96-months of the **Obama Era** (1 January 2009 through 31 December 2016), the U.S. labor force lost a net 486,000 jobs, of whom 10,479,000 entered the labor force, 14,722,000 voluntarily departed, and 3,757,000 fewer people were recorded as officially unemployed. It is important to remember that the first 21-months of the Obama Administration, the President were immersed in Great Recession and post-recession recovery operations. Obama's next 75-months in office produced the longest run of consecutive labor gains since WWII when BLS record keeping began. This 75-month run greatly exceeded the previous record of 48-months that was recorded from July 1986 to June 1990.

During the 8-years/96-months of the **Bush II Era** (1 January 2001 through 31 December 2008), the U.S. labor force lost a net 13,429,000 jobs, which included the 8-months of the 2001 Recession (March 2001 through November 2001) and 13-months of Great Recession (December 2007 through December 2008), the aftermath of the September 11, 2001 attacks, the ensuing global war on terrorism as well as Hurricanes Katrina, Ike, Rita, Wilma, Ivan, Charley, Frances, Jeanne and Allison that collectively caused over $275 billion in damage. As a result of these constant calamities, all three labor force sectors yielded negative results: only 2,115,000 workers entered the labor force (an abysmal average of only 22,000 new jobs per month), 9,892,000 able-bodied citizens voluntarily departed, and 5,652,000 people were added to the unemployment rolls.

From the **beginning of the 21st Century** (1 January 2000 to 1 September 2017), the **American labor force is still weaker by a net 11,032,000 workers (highlighted in yellow).** This weakness is exacerbated by a population growth of 44 million additional American citizens present today

compared to 2000 (282 million versus 326 million) plus the impact of a rapid rise of contingent part-time workers in comparison to traditional full-time workers.

Jobenomics Goal: 20 Million Net New Jobs in the Next 10-Years



The United States consistently produced tens of millions of new jobs for six consecutive decades from the 1940s through the 1990s. The bottom fell out in the decade of the 2000s with a net loss of one million jobs. Consequently, it is critical that a significant number of new jobs are created for the U.S. economy to prosper.

20 million net new jobs per decade is a goal that has been historically achieved. It is also the number needed to accommodate new labor force entrants, a growing population, and maintaining an unemployment rate of 5%, which is considered a normal rate of "full" employment.

U.S. employment increased by 16.9 million so far this decade and Jobenomics forecasts that at the current rate total U.S. job creation should reach 20.9 million by the end of the decade, assuming no financial downturns or a major global crisis. Notwithstanding, 20.9 million is still short of the Trump Administration's goal of 25 million new jobs.

The United States has been very fortunate that this decade has been financial crisis and recession-free this decade, but this fortuitousness is not likely to last indefinitely. Measured against the 250,000 new jobs per month standard, the U.S. labor force is 27% short in the number of new jobs needed. In terms of raw numbers since the beginning of this decade, the United States has produced 181,516 jobs per month.

Decaying U.S. Labor Force

Source: U.S. Bureau of Labor Statistics, U.S. Census Bureau Data

As of: 1 October 2017	1980s	1990s	2000s	2010-2017
U.S. Population At Period End	246,819,230	272,690,813	307,006,550	325,994,783
Population Growth #	21,763,743	25,871,583	34,315,737	18,988,233
Population Growth %	10%	10%	13%	6%
Total Employed At Period End	90,673,000	130,781,000	129,778,000	146,659,000
Employment Growth #	19,433,000	21,932,000	1,003,000	15,547,000
Employment Growth %	27%	44%	-1%	12%
Percentage Of Employment Growth Compared To Population Growth	**18%**	**34%**	**-13%**	**6%**
	Strengthening Workforce		**Decaying Workforce**	
Months in Recession	**22**	**8**	**26**	**0**

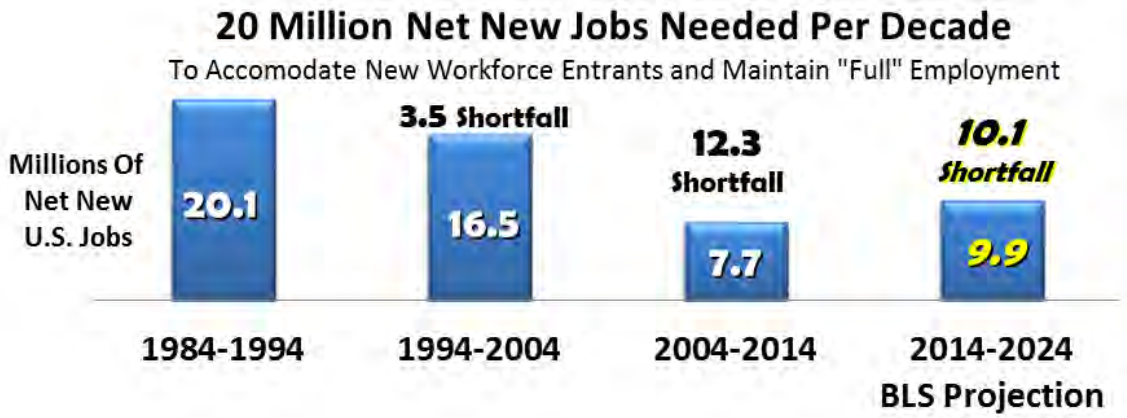
The 1980s and 1990s were decades of robust job creation and a strengthening workforce. In these two decades prior to the turn of the 21st Century, employment growth **increased** significantly faster than population growth (1980-1989: Employment Growth Rate was 27% versus a Population Growth Rate of 10%, and 1990-1999: Employment Growth Rate 44% versus Population Growth Rate 10%).

As a result, the 1980s and 1990s produced an average of about 20 million net new jobs in a population that was 52 to 78 million people smaller than today. Equally important is the fact that these jobs were produced during two decades that suffered 30 months of recession.

The 17-year period from year 2000 to today can be characterized as an era of weak job creation and a decaying workforce. During this era, employment growth **decreased** significantly faster than population growth (2000-2009: Employment Growth Rate was a negative 1% versus a Population Growth Rate of 13%, and 2010-2017: Employment Growth Rate 12% versus Population Growth Rate 6%).
The decade of the 2000s was a particularly bad decade with negative employment growth due to 26 months in two recessions, the second of which was the 18-month long Great Recession of 2007 to 2009 that precipitated a global financial crisis. The most recent seven year period were years of sclerotic job creation (only 12%) despite the fact the U.S. posted the longest streak of continuous job growth on record.

Persistent Job Creation Shortfall

Source: U.S. Bureau of Labor Statistics, Employment Projections: 2014-24 Summary



Robust labor force growth is not forecasted by the U.S. Bureau of Labor Statistics. The BLS projects that the next decade (2014 to 2024) will produce only 9.9 million new jobs, which is a shortfall of 10.1 million net new jobs needed per decade to accommodate new workforce entrants and maintain full employment. The BLS projects meager gains of 56,500 jobs in goods-producing industries, 9,263,600 jobs in services-providing industries, 26,900 jobs in agriculture/forestry/fishing industries and 579,300 jobs in the non-agricultural self-employed workforce over the next decade—about half the number of jobs needed.[5]

[5] U.S. Bureau of Labor Statistics, Employment Projections: 2014-24 Summary, Table 2. Employment by major industry sector, 8 Dec 2015, http://www.bls.gov/news.release/ecopro.nr0.htm

Over the last four decades, the United States suffered a serious reversal in the number of job gains compared to job losses.

- In the 1980s and 1990s, by a factor of almost 5:1, more workers entered the U.S. labor force than voluntarily departed.
- In the first decade of the 21st Century (2000 to 2010), the U.S. labor force not only shrank by 1.0 million workers but 15.2 million adults who were capable of working voluntarily departed the labor force, for a net total loss of 16.2 million workers. This drastic loss of workers can be largely attributed to the 2001 Recession (caused by the collapse of the dot-com bubble) and the 2007-2009 Great Recession (precipitated by the sub-prime mortgage crisis) that sidelined 8.7 million workers and encouraged a 37% increase of 5.7 million new college enrollments.
- From 2010 through Q3 2017, labor force gains and losses were 16.9 million gains and 10.6 million losses. If a major domestic financial crisis or recession does not transpire by 2020, Jobenomics projects 20.9 million new workforce entrants versus 8.5 voluntary departures based on the latest trend of people rejoining the labor force from the Not-in-Labor-Force category. Assuming that these trends continue, the net labor force gain would be 12.4 (20.9 minus 8.5) million. Admittedly, this is optimist and fuzzy math, but this net meager labor force gain would still be insufficient to grow the economy, reverse the decline in the American middle-class and achieve President Trump's bold economic and labor force vision.

More business and job creation is needed to build a strong labor force, mitigate voluntary workforce departures, and to adequately condition the American populace for the next financial crisis. The U.S. economy is not sustainable if the standard and contingent workforce cannot generate sufficient goods and services to power economic growth, which is measured in terms of gross domestic product.

The Nexus between Jobs and GDP. Gross domestic product (GDP) is currently the best way to measure a country's economy. Per the U.S. Bureau of Economic Analysis, GDP "is the value of the goods and services produced by the nation's economy less the value of the goods and services used up in production. GDP is also equal to the sum of personal consumption expenditures, gross private domestic investment, net exports of goods and services, and government consumption expenditures and gross investment."[6]

[6] U.S. Bureau of Economic Analysis, https://bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm

Personal Consumption/Expenditures as a Percent of U.S. GDP

Source: Federal Reserve, Flow of Funds Accounts of the United States, Q2 2017, Table F.2 Distribution of Gross Domestic Product, 21 September 2017[7]

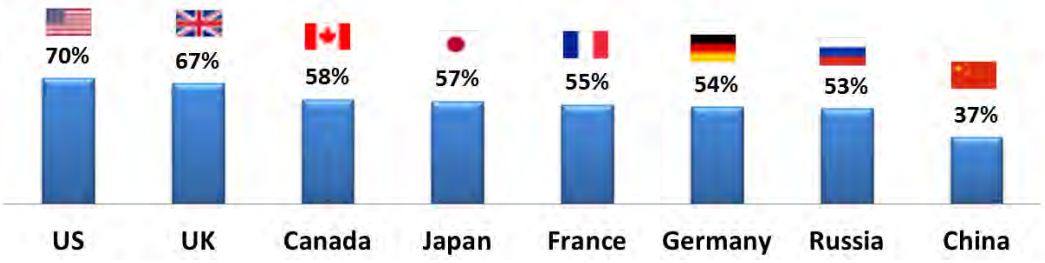
Major Components	$ Trillions			%
	2007	2012	2017 Q2	2017 Q2
Personal consumption/expenditures	9.8	11.1	**13.3**	**70%**
Government consumption/expenditures	2.7	3.1	**3.3**	19%
Private domestic investments	2.3	2.1	**3.2**	15%
Net U.S. imports/exports	(0.7)	(0.6)	**(0.6)**	-4%
Total U.S. Gross Domestic Product	**14.0**	**15.7**	**19.2**	100%

As shown, the U.S. Federal Reserve (U.S. central bank in charge of U.S. monetary policy) provides an excellent historical snapshot of the four major components of U.S. GDP. Personal consumption and expenditures (PCE) accounts for about 70% of domestic final spending, and thus it is the primary engine that drives future economic growth. PCE shows how much of the income earned by households is being spent/purchased by people on current consumption as opposed to how much is being saved for future consumption.

PCE is dependent on a growing labor force that produces goods and services, and the wages that the workforce earns. If labor and wages stop growing, then GDP stops growing. For every monthly percentage point change of GDP growth approximately 125,000 jobs are gained or lost. Thus, over the course of a year 1.5 million jobs are at stake. America experienced this repercussion during the Great Recession, where the U.S. GDP dropped approximately 5.5% year-over-year (from +2.7% in 2006 to -2.8 in 2009) resulting in the loss of 8.7 million jobs.

International Comparison of Consumption as a Percent of GDP

Source: World Bank (Selected Countries) Household final consumption expenditure, etc. (% of GDP)



According to The World Bank[8], the United States is the largest and most conspicuous consumption-based economy in the world. As shown, the US leads the world with 70% consumption as a percent of GDP. Other Western economies average about 60%. Emerging economies average around 35%.

[7] Board of Governors of the Federal Reserve System, Z.1 Financial Accounts of the US, Second Quarter 2017, Table F.2 Distribution of Gross Domestic Product, Billions of dollars; quarterly figures are seasonally adjusted annual rates, https://www.federalreserve.gov/releases/z1/current/z1.pdf

In America's pre-consumer era, the US economy was based on agriculture and cottage industries where citizens produced what they needed and traded the rest. Non-essential consumption was largely the privilege of an elite few. Over the last century, consumerism was introduced to the masses as part of the American economic equation. Today, consumption is no longer a privilege but a necessity. Increased consumption is necessary to keep the economy growing.

Modern-day Americans are programmed to be good consumers. It is estimated[9] that an average American child watches 20,000 TV commercials per year. By age 65, the average American watches 2 million commercials. We are programmed for mega-consumption for special occasions, like Christmas that evokes $80 billion worth of gift-giving. When an event, like 9/11 or the Great Recession of 2008-09, happens the federal government steps in to encourage consumption. The Monday following the 9/11 Trade Tower attacks, the White House encouraged American's to continue shopping due to fears that Wall Street would falter if consumer confidence plummeted. To combat the negative effects of the Great Recession, the federal government implemented $17 trillion worth of bailouts, buyouts and stimuli to keep financial institutions and corporations afloat in order to stimulate our consumption-based economy.

Without ever-growing consumption, the economy would falter. If U.S. consumption fell over time to the level of our nearest neighbor Canada (58%), the consumption component of U.S. GDP would drop by 12-percentage points. If government expenditures, private sector investment and import components remained the same, a 12% reduction would place 18 million jobs a risk. In many ways this is transpiring now in America largely due to automation and ever greater amounts of work being done by part-time workers—both of which are rapidly replacing higher-paid full-time workers with benefits. Fewer workers and lower wages directly equates to lower consumption.

According to the International Monetary Fund (IMF), an organization of 189 countries working to promote high employment and sustainable economic growth, states that GDP growth underpins economic, employment and income growth essential to promoting social progress.[10] While GDP has become an "everyday shorthand for economic performance" with today's pundits and politicians, it is an "imperfect measure of economic welfare, with well-known drawbacks" such as greatly underestimating the impact of the emerging digital and network economy (discussed herein).

Governments traditionally measure GDP as the monetary value of the total output of goods and services provided by traditional industries and standard workforces during a specific period. Consequently, the economic impact of contingent workers (part-time, self-employed, freelancers, etc.) and non-standard businesses (home-based businesses, independent contractors, etc.) are largely underreported. Given the likelihood that the digital economy will upend the traditional economy and the contingent workforce will exceed the standard workforce in the next decade or

---

[8] World Bank, Household final consumption expenditure, etc. (% of GDP), http://data.worldbank.org/indicator/NE.CON.PETC.ZS

[9] The Sourcebook for Teaching Science – Strategies, Activities, and Instructional Resources, Television Statistics, IV, Commercialism, http://www.csun.edu/science/health/docs/tv&health.html

[10] International Monetary Fund, Rethinking GDP, March 2017, http://www.imf.org/external/pubs/ft/fandd/2017/03/coyle.htm

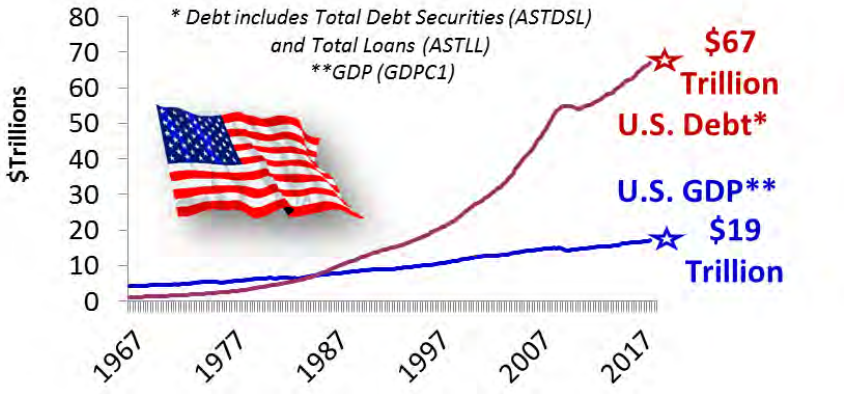
shortly thereafter, it is now time to redefine the scope and reporting requirement of GDP to better incorporate the value of the new economy.

Most economists also believe that economic growth depends on GDP growth, which in turn is dependent on stable investment in business and job growth. When an economy grows at negative or sclerotic GDP rates, instability and unrest occurs and governing institutions lose their sense of legitimacy as evidenced by what's happening globally today.

Over the last half century, U.S. debt has grown at a rate decidedly faster than GDP and shows no signs of slowing if Americans continue on their current path of over-spending and under-producing. Since spending cuts do not seem to be possible due to America's deeply divided electorate, the solution to growing GDP rests in increased production, which depends on greater business and job creation.

U.S. Debt versus GDP

Source: U.S. Federal Reserve Bank of St. Louis Economic Research (FRED)



Over the last five decades, total U.S. debt (government, business, financial and individual) has grown from a luxury for a few to an addiction to all. Compared to the current U.S. GDP of $19 trillion, total public and private U.S. debt has now reached an all-time high of $67 trillion, up from $4 trillion in 1967 and $27 trillion at the turn of the Century, as reported by the U.S. Federal Reserve system.[11] U.S. federal government debt equals about one-third of total American debt whereas private debt is responsible for the remaining two-thirds. Most of the private debt is due to excessive consumption.[12]

Excessive consumption and debt are not only an American challenge. According to the IMF, global combined debt (government, household, and nonfinancial firms—not including the financial sector) is at an all-time at 225% of world GDP, or $152 trillion. Two-thirds, amounting to about $100 trillion, consists of liabilities in the private sector. "The sheer size of (private sector) debt could set the stage for an unprecedented private deleveraging process that could thwart the fragile (global) economic

[11] $67 trillion is calculated from Fed tables: Total Debt Securities (ASTDSL), Total Loans (ASTLL) and GDP (GDPC1) that can be found at https://fred.stlouisfed.org/series/ASTDSL, https://fred.stlouisfed.org/series/ASTLL, and https://fred.stlouisfed.org/series/GDPC1

[12] U.S. Bureau of Economic Analysis, Real Gross Domestic Product [GDPC1], retrieved from FRED, Federal Reserve Bank of St. Louis, 9 October 2016, https://fred.stlouisfed.org/series/GDPC1, July 9, 2016

recovery….Financial crises tend to be associated with excessive private debt….It is clear that meaningful deleveraging will be very difficult without robust (GDP) growth." [13]

As scary as this IMF prediction is, it does not include the unimaginable debt associated with the too-big-to-fail financial sector. The financial sector not only includes commercial banks, shadow banks (hedge funds, money-market mutual funds, etc.) and financial intermediaries (insurance companies, pension funds, etc.)—all of which pose a near-term global financial risk in excess of $50 trillion.

And then there is the invisible financial behemoth called derivatives. Derivatives are largely unregulated financial instruments based on the perceived future value (bets) of an underlying asset like stock, bonds, mortgages, currencies, interest rates, as well as a variety of other exotic bets such as the weather's effect on crops. Investopedia estimates the derivatives market at $1.2 quadrillion ($1,200 trillion) that equates to over 10-times world GDP or 60-times U.S. GDP.[14] Derivatives caused the sub-prime mortgage crisis that led to the 2007 Great Recession and global financial crisis and are likely to be a major contributor to the next global financial reset.

Little has been done by U.S. policy-makers since the Great Recession to mitigate the threat of another U.S. derivative crisis, or protecting the U.S. economy from threats posed by foreign-based financial institutions that manage derivatives.[15] For example, Brexit, the British exit from the European Union (EU), poses a significant global financial challenge. A significant amount of derivatives trading is accomplished by London clearing houses (intermediaries between buyers and sellers of financial instruments), such as the London Stock Exchange' London Clearing House (LCH).

LCH controls and processes tens of trillions of dollars' worth of derivatives per day including over 40% of the global interest-rate derivatives market with a daily turnover of $3 trillion. By withdrawing from the EU, London's "passporting" rights of derivatives traded across the EU is questionable from both oversight, legal and self-interest perspectives.[16] According to Financial Times, according to local rules, the European Union would have little control over the policing of derivatives managed by London after the exit.[17] Any dispute between London and the EU would result in a potential financial crisis that could be as large as the global ramifications of the 2007 U.S. sub-prime mortgage crisis.

Since the Great Recession, government debt increased by 50% in advanced economies that are busy printing money, lowering interest rates, buying up weak financial assets (like mortgages), spending on overpriced infrastructure projects (especially in China) and a host of other programs to stimulate GDP growth. In the short-term, these efforts have been successful elevating consumption and elevating

[13] International Monetary Fund (IMF), Fiscal Monitor October 2016, https://www.imf.org/external/pubs/ft/fm/2016/02/pdf/fm1602.pdf

[14] Investopedia, How big is the derivatives market?, 27 May 2014, http://www.investopedia.com/ask/answers/052715/how-big-derivatives-market.asp

[15] For a detailed discussion on derivatives and their role in starting the Great Recession read Jobenomics, the book.

[16] The Economist, Brexit and Derivatives, Standing Novations, Brexit will give the derivatives market a nasty headache, 14 October 2017, https://www.economist.com/news/finance-and-economics/21730160-legal-status-thousands-contracts-may-be-thrown-doubt-brexit-will

[17] The Financial Times, Clearing & Settlement, What is London's euro clearing market and why is Brussels worried?, 13 June 2017, https://www.ft.com/content/18dcf566-5025-11e7-bfb8-997009366969

stock and real estate markets. However, risks continue to compound. Banks are more fragile (e.g., Germany's largest bank's stock value has dropped by 60% in the last year alone). Insurance companies are scrambling (e.g., U.S. insurance companies are exiting Obamacare in droves). Pension funds are underfunded (e.g., U.S. state and local pension funds have up to $3 trillion of unfunded commitments). Welfare programs are on the road to insolvency (e.g., Medicare is projected to be insolvent within 10-years). In other words, there are very dark storm clouds on the horizon.

U.S. Government Financial Bailouts, Buyouts and Stimuli Since 2008

Total $16.9 Trillion			
Federal Reserve	**$ 11,213**	**Treasury**	**$2,910**
Primary Credit Discount	$ 111	Troubled Asset Relief Program (TARP)	$700
Secondary Credit	1.00	Tax Break for Banks	$29
Primary dealer and others	$ 147	Stimulus Package (Bush)	$168
ABCP Liquidity	$ 146	Stimulus II (Obama)	$787
AIG Credit	$ 60	Treasury Exchange Stabilization	$50
Commercial Paper Funding	$ 1,200	Student Loan Purchases	$60
Maiden Lane (Bear Stearns)	$ 30	Citigroup Bailout Treasury	$5
Maiden Lane II (AIG)	$ 23	Bank of America Bailout Treasury	$8
Maiden Lane III (AIG)	$ 30	Support for Fannie/Freddie	$400
Term Securities Lending	$ 75	Line of Credit for FDIC	$500
Term Auction Facility	$ 375	Treasury Commitment to TALF	$100
Securities lending overnight	$ 10	Treasury Commitment to PPIP	$100
Term Asset-Backed Loan Facility	$ 1,000	Cash for Clunkers	$3
Currency Swaps/Other Assets	$ 606	**FDIC**	**$2,478**
GSE Debt Purchases	$ 200	Public-Private Investment (PPIP)	$1,000
GSE Mortgage-Backed Securities	$ 1,250	FDIC Liquidity Guarantees	$1,400
Citigroup Bailout Fed Portion	$ 220	Guaranteeing GE Debt	$65
Bank of America Bailout	$ 87	Citigroup Bailout FDIC Share	$10
Commitment to Buy Treasuries	$ 300	Bank of America Bailout	$3
Quantitative Easing (QE1)	$ 1,750	**HUD**	**$306**
Quantitative Easing (QE2)	$ 600	Hope for Homeowners (FHA)	$300
Operation Twist	$ 667	Neighborhood Stabilization (FHA)	$6
Quantitative Easing (QE3)*	$ 1,440	** $40B/month thru 2015 (36 months)*	
Tresury Buying Program (QE4)**	$ 885	*** $45B/mon for 18 months & $75B for 2014*	

Source: Bloomberg, Jobenomics

Since the onset of the Great Recession, the U.S. federal government and the Fed spent almost $17 trillion dollars' worth of stimuli and incentive programs. The Fed is responsible for two-thirds ($11 trillion) of the total. In addition to spending, the Fed has held interest rates to near-zero in hopes of invigorating the economy. The net result of government spending and a near-zero interest rate policy has not achieved robust GDP or labor force growth as anticipated. However, it did keep the economy from sliding into a depression and caused the U.S. stock markets to soar, greatly benefitting the top 1% while simultaneously eroding the American middle-class and labor force.

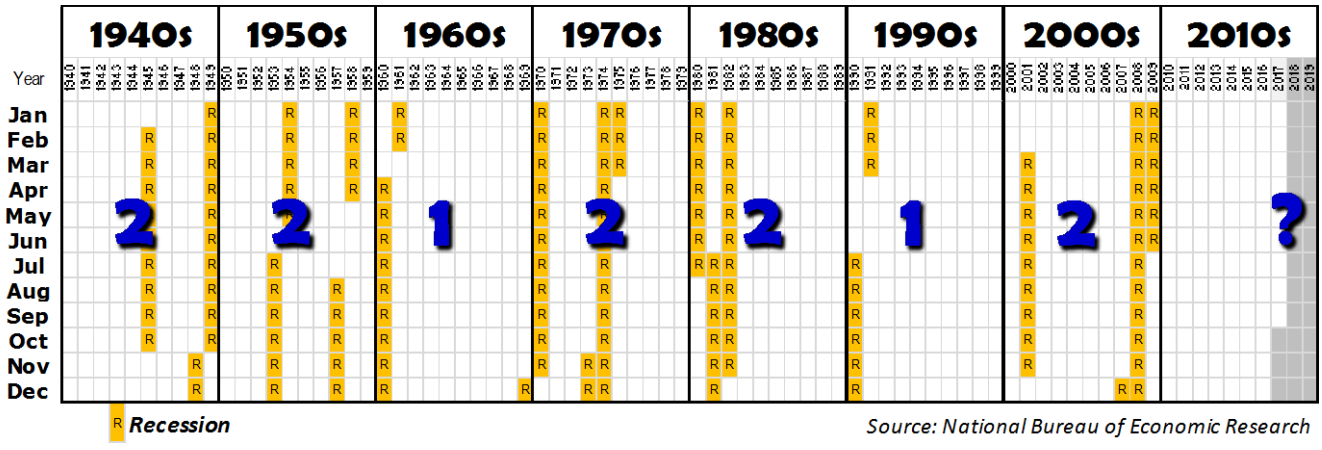
The infusion of $17 trillion into the economy, foreign investment has helped keep the U.S. economy recession-free since the Great Recession. The reason for foreign investment is that the U.S. economy has been the "least ugly" economy in the world. The European Union is in crisis with its southern member nations in recession. China has experienced a slowdown and a large part of the remaining developing world countries are struggling. Even the oil-rich Middle East is reeling from low oil prices, insurgencies and terrorism. So until things change, America should continue to be a safe haven for foreign investment. Unfortunately, the international landscape is rapidly evolving with potentially negative political, economic and military consequences.

By being the least ugly global economy, U.S. stock, bond and real estate markets have been able to attract both foreign and domestic investors, which has managed to keep GDP growing, albeit much too slowly. President Trump's economic and job creation vision (doubling U.S. GDP growth to the 3.5% to 4.0% range and creating 25 million new jobs.[18]) is vital to staving off a near-term recession and maintaining the flow of foreign investment into the United States.

However, the Trump Administration faces a Catch-22 (a dilemma where there is no easy solution due to conflicting positions) in regard to foreign investment. If the U.S. economy grows too quickly, the $10 trillion dollars in dollar-denominated foreign debt could trigger a foreign financial crisis that would not only restrict capital inflows to the United States, but would threaten foreign government investment in their own domestic programs. Implementation of tariffs, import taxes and other trade-limiting policies could precipitate reciprocal foreign protectionist policies and exacerbate the potential for a financial crisis and/or conflict. President Trump's Catch-22 ultimately lies in resolving the dispute between supporters of nationalistic policies and those that promote globalism.

Unfortunately, profligate government spending has reached its zenith and the relative attractiveness of U.S. markets may be approaching an apex, making the likelihood of a U.S. recession relatively high. A recession would not only impact the U.S. economy, but would cause a U-turn in recent incremental U.S. employment gains.

U.S. Average of 1.7 Recessions per Decade



Source: National Bureau of Economic Research

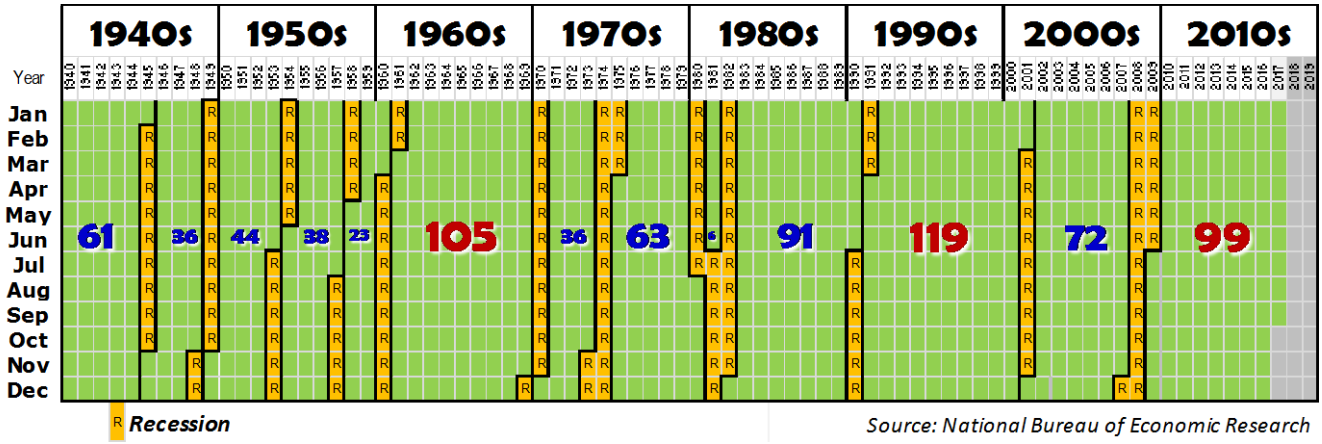
[18] White House Website, https://www.whitehouse.gov/bringing-back-jobs-and-growth

Since the 1940s, the U.S. economy averaged 3 financial crises and 1.7 recessions per decade. Unlike many parts of the world, the United States has been recession free this decade largely due to government spending and the relative attractiveness of U.S. investment opportunities compared to the rest of the world. The question is how long can the U.S. remain crisis and recession free?

Many economists feel that a recession (two quarters of negative GDP growth) is likely. In January 2016, a Financial Times survey of 51 economists predicted a one-in-five chance of a U.S. recession in the next 12 months.[19] In March 2016, PIMCO, a global investment management firm, warns investor that a U.S. recession is likely by 2020.[20] In June 2016, J.P. Morgan Chase economists projected a 36% chance of a U.S. recession in 12 months.[21] In July 2016, Deutsche bank estimated a 60% chance of the U.S. entering a recession in the next 12 months.[22] In October 2016, Wall Street Journal's survey of economists placed a 60% likelihood of a U.S. recession within four years.[23] In June 2017, Goldman Sachs gives the United States a 25% chance of a recession with two years.[24]

While these projections are only guesstimates, the theme is relatively consistent that sclerotic GDP growth begets recessions. So far the Trump Administration has proven these negative prognostications wrong with two quarters of 3%+ growth and positive job growth. However, a sprint does not equate to a marathon. Hopefully, the Administration has strong legs to keep the economy and labor force running smoothly.

Longest Running Post-Recession Recoveries (Months)



[19] Financial Times, Economists see 20% chance of US recession, 31 January 2016, https://www.ft.com/content/da2ed38a-c6bd-11e5-b3b1-7b2481276e45

[20] PIMCO, The Recession of 2020, March 2016, https://www.pimco.com/en-us/insights/economic-and-market-commentary/macro-perspectives/the-recession-of-2020

[21] MarketWatch, More than one-in-three chance of a recession, J.P. Morgan says, 3 June 2016, http://www.marketwatch.com/story/more-than-one-in-three-chance-of-a-recession-jp-morgan-says-2016-06-03

[22] Fortune, Deutsche Bank Says the U.S. Is Likely Headed for a Recession, 6 July 2016, http://fortune.com/2016/07/06/deutsche-bank-recession/

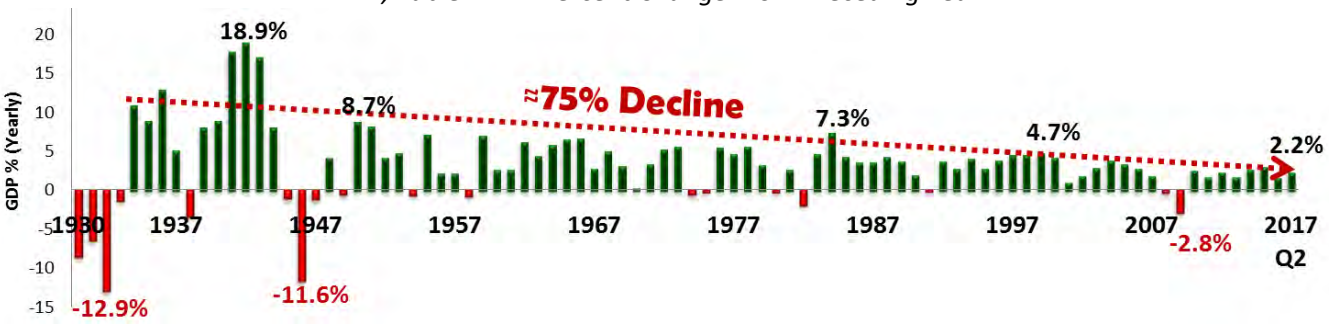
[23] Forbes, Recession Likely In The Next Four Years, 18 October 2016, http://www.forbes.com/sites/billconerly/2016/10/18/recession-likely-in-the-next-four-years/#d0de627536a2

[24] The Street, A U.S. Recession Has a 25% Chance of Happening Within Two Years, Goldman Sachs Believes, 25 June 2017, https://www.thestreet.com/story/14194762/1/a-u-s-recession-has-a-25-chance-of-happening-within-two-years-goldman-sachs-believes.html

Since the end of the Great Recession to 1 October 2017, the United States economy has run 99 straight months without a recession, which puts this long-run in 3rd place over the last eight decades. The 1990s had the longest run of 119 months, followed by 105 recession-free months in the 1960s. Hypothetically, if the current economic expansion matches the historical record of 119 months, the next recession will occur in 22 months or in June 2019—a little more than halfway through President Trump's first term in office. While there is little evidence that economic expansions are limited by time, President Trump will not only have to deliver on his campaign promises, but bear the sins of past presidential, congressional and central bank decisions.

U.S. GDP Growth History, by Year, Since Great Depression

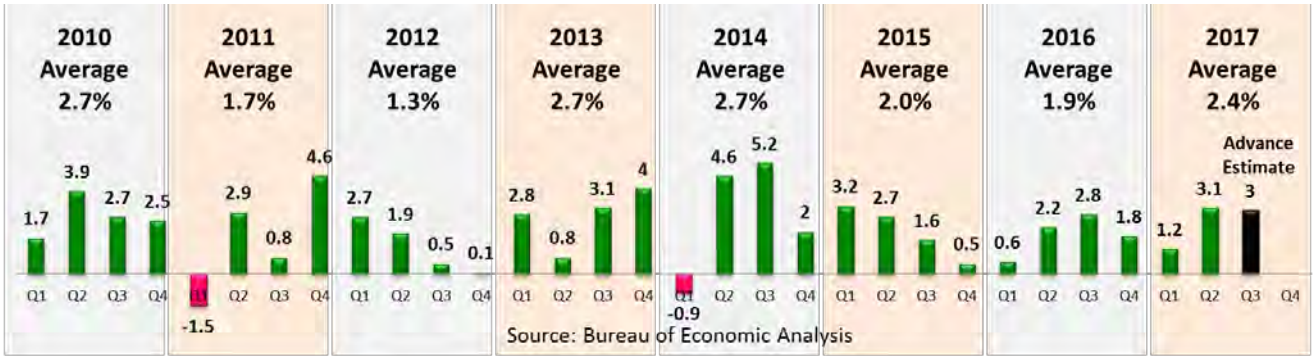
BEA, Table 1.1.1. Percent Change From Preceding Year



During the Great Depression, U.S. GDP hit its nadir of a negative 12.9% growth in 1932—the year that President Franklin D. Roosevelt was elected. During FDR's first term in office, he instituted the "New Deal" that pumped significant amounts of federal government money to revive the economy. During FDR's second term in office (1937-41), the U.S. economy boomed during the buildup and entry into WWII. In 1942, U.S. GDP hit its all-time high of 18.9% during the height of WWII. During the post-WWII period, U.S. GDP growth slumped to a negative 11.6% due reduced government spending and tepid private sector investment. However by 1950, the U.S. economy was humming again. By 1950, U.S. GDP hit a high of 8.7%. Since 1950, U.S. GDP declined steadily to the current day, surging during periods of war (Korea 1950-53, Vietnam 1960-75) and declining during recessionary periods (1937-38, 1945, 1949, 1953, 1958, 1960-61, 1969-70, 1973-75, 1980, 1981-82, 1990-91, 2001 and the Great Recession of 2007-09). As shown by the dotted red line, GDP grow declined by approximately 75% over the last 9-decades.

Real GDP Quarterly Percent Change This Decade

BEA, Table 1.1.1. Percent Change From Preceding Quarterly Period



Most economists believe that economic growth depends on employment and GDP growth. Today, the ideal rate for U.S. GDP growth is over 3%. In today's mature economy if GDP growth exceeds 4%, it generally signals overheating and/or asset bubbles. Any GDP growth below 2% is considered sclerotic growth that makes the U.S. economy vulnerable to financial downturns.

According to the U.S. Bureau of Economic Analysis (BEA), during the post-recession recovery period from Q1 2010 through Q3 2017, U.S. GDP averaged 2.3%. In 2015 and 2016, U.S. GDP grew by subpar rates of 2.0% and 1.9% respectively. During the first three quarters of the Trump Administration, GDP averaged 2.4%. However, the last two quarters have posted 3.1% and 3.0% (advance estimate) gains.

- **Q1 2017** (January, February and March 2017)'s GDP final estimate was a subpar 1.2%—up from an abysmal "advance" estimate of 0.7%, equal to the 1.2% "second" estimate, and down from the 1.4% "third" estimate. Regardless of estimate, Q1 GDP data was not good news for the new Trump Administration. However, these low percentages can be rationalized as a carryover from the previous Administration.

- **Q2 2017** (April, May and June 2017)'s GDP is 3.1%, up from an "advance" estimate of 2.6%—a significant improvement over Q1 and a good sign for President Trump's stated goal of raising U.S. GDP growth to a sustained 4.0% growth rate over a decade.

- **Q3 2017** (July, August and September 2017) advance estimate is 3.0%. The Federal Reserve Bank of Atlanta's GDPNow forecast model for Q3 2017 is 3.3%. The "Blue Chip" survey of the bottom 10 and top 10 leading business economists forecast that Q3 2017 growth will eventually fall between 2.1% and 3.2%.

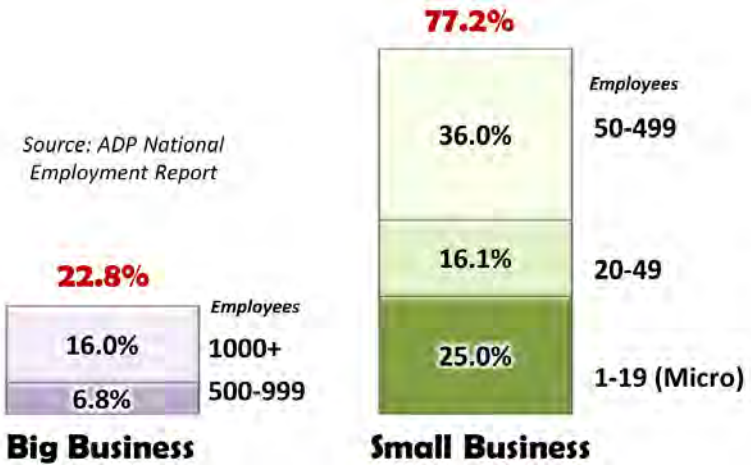
While GDP growth does not insure employment growth, sclerotic GDP growth discourages business hiring, consumer spending and labor force expansion. Sclerotic GDP growth also discourages lower rates of unemployment and voluntary workforce departures. Negative GDP growth creates recessions and depressions depending on the severity and longevity of the contracting economy. The solution to avoid a financial crisis is to accelerate GDP growth, which requires the creation of more productive private sector jobs, which, in turn, can only be generated by a massive expansion of the small business sector.

In conclusion, the nexus between jobs and GDP is relatively straightforward. Small businesses create the vast majority of new jobs. Jobs generate wages that are used for consumption. Consumption drives private sector investment that begets returns. Due to the erosion of the middle class, the vast majority (86%) of Americans now make below mean wages, which results in less consumption and investment. In order to get profitable returns, the wealthy are increasingly turning to making money on money (stock buybacks, mergers, acquisitions, secondary markets, etc.) as opposed to make money on labor. The net result of today's negative feedback loop is greater income inequality and slow growth. To turn today's economy into a positive feedback loop, the Administration needs to focus more on incentivizing and accelerating startup, self-employed, micro and small business development, which in turn will create the maximum number of new jobs. If each of America's 28 million small businesses only one job, Trump's 25 million new jobs goal could be easily realized.

The Criticality of Small Business on Job Creation. Jobs do not create jobs, businesses do, especially small businesses. Private sector businesses employ 77.3% of all U.S. workers. Of the private sector businesses, the vast majority of U.S. workers are employed by small and micro businesses over the last three decades, even during periods of recession.

Private Sector Employment Percentages by Company Size

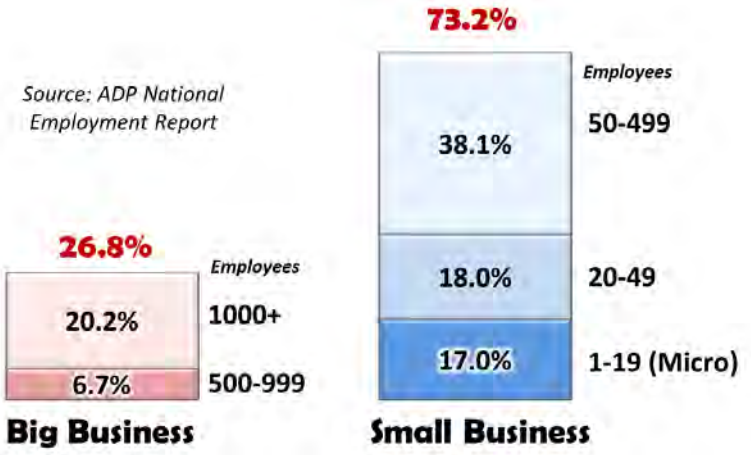
1 October 2017



Today, U.S. private sector small businesses employ 77.2% of all Americans. Small businesses (less than 499 employees) employ **3.4-times** as many citizens as large businesses (500+ employees), or 96,372,361 versus 28,542,121 jobs respectively. Microbusinesses (less than 20 employees) employ **1.6-times** more than very large institutions (over 1,000 employees), or 31,287,554 versus 20,015,946 jobs respectively.

Percent of New U.S. Jobs Created This Decade

1 January 2010 to 1 October 2017



This decade, small businesses created 73.6% of all new jobs in the United States. Small businesses (less than 499 employees) created **2.7-times** more jobs as large businesses (500+ employees), or 12,706,977 versus 4,670,100 new jobs respectively. Microbusinesses (less than 20 employees) created **0.8-times (or 84%)** the amount of jobs than very large institutions (1,000+ employees), or 2,957,237 versus 3,506,217 new jobs respectively.

Without a viable small business creation and sustainment strategy, the U.S. economy is unlikely to prosper as it did in the 20th Century. Small business creation is unquestionably the best way to create tens of millions of new jobs. Not only is this true during today's post-Great Recession recovery period, but during the Great Recession of 2007-2009.

A strong small business sector is of paramount importance in supporting big business as well as government. The more people small businesses can employ relieves big business and government from focusing on personnel issues and increases their focus on more strategic matters like industrial recapitalization and national security.

Small business creation is essential from a long-term unemployed and part-time worker point-of-view. Small businesses tend to hire the unemployed and underemployed at a far greater rate than large businesses that are choosy about whom they hire. To a large extent, big businesses do not hire the unemployed. Instead, they tend to hire proven personnel from competitors and outsource more mundane work to subcontractors, contingent workers and foreign corporations.

Federal, state and local governments can also create jobs, but the likelihood of increased government employment is limited considering the current political and fiscal environment. Even with profligate government spending after the Great Recession, net government jobs dropped by several hundred thousand employees. Spending on government-sponsored infrastructure projects (such as roads, bridges, etc.) is popular political rhetoric in regard to job creation. However, government-sponsored infrastructure projects are limited by budget constraints, and the jobs they produce (mainly construction) are often temporary, costly and politically-driven.

Notwithstanding, government can play a large role in business creation by the policies and incentives they promote. From a Jobenomics perspective, policy-makers should focus on the two emerging technology revolutions (Energy and Network) that could create 20 million net new American jobs if properly managed and supported. For example,

- In the Energy Technology Revolution, America's electrical grid requires approximately $2 trillion to modernize and protect. Rather than restoring a 50-year old electrical infrastructure, government could empower businesses to create a new distributed and dispersed point-of-use power generation system that could create tens of millions of local, middle-class jobs via emerging renewable (such as solar, wind, geothermal and high-head hydro) and cleaner fossil fuel (such as natural gas) technologies.[25]
- The Network Technology Revolution is facilitating an explosion in the emerging digital economy. The McKinsey Global Institute (MGI) lists twelve disruptive NTR technologies that will affect billions of consumers and workers, and inject a hundred trillion dollars' worth of economic activity into the global digital economy by 2025.[26] If MGI predictions are realized,

[25] Jobenomics, Energy Technology Revolution report, 18 June 2015, http://jobenomicsblog.com/energy-technology-revolution/

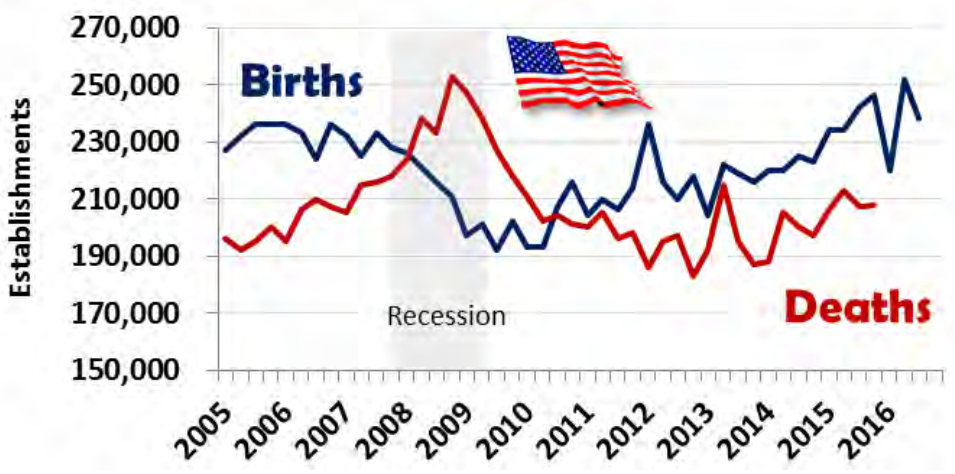
[26] McKinsey Global Institute, Disruptive technologies: Advances that will transform life, business, and the global economy, May 2013, file:///C:/Users/CHUCK/Downloads/MGI_Disruptive_technologies_Full_report_May2013.pdf

the global economic impact of these disruptive technologies would amount to $124 trillion which would be greater than the entire global nominal GDP of $86 trillion or slightly less than the $138 trillion in global purchasing power parity GDP as calculated by the International Monetary Fund's 2016 World Economic Outlook Database.[27]

The solution to growing America's economy involves putting our small business engine into over-drive. Energizing existing small businesses and creating new small and self-employed businesses could easily create 20 million net new jobs within a decade. To prove the validity of this assertion, Jobenomics is working with a number of cities to implement community based business generators to mass produce startup businesses. The objective of a Jobenomics Community-Based Business Generator is to increase "birth rates" of startup businesses, extend the "life span" of fledgling businesses, and increase the number of employees per business.

Quarterly U.S. Business Birth/Death History: Q1 2005 through Q3 2016

Source: Bureau of Labor Statistics[28]



As shown, the U.S. establishment business birth/death history since 2005 has been relatively consistent ranging from lows around 187,000 to highs of 252,000 births/deaths per quarter. The BLS defines establishments as a physical location of a certain economic activity—for example, a factory, mine, store or office.

- In terms of births/deaths per quarter, over the last decade, births exceeded deaths in 36 quarters (out of a total of 45 quarters). The 9 quarters where deaths exceeded establishment births occurred during and shortly after the Great Recession. The average number of new business establishments per year was 885,667 whereas the average number of establishment closings per year was 829,156, for a net gain of 56,511 new businesses per year.
- In terms of employment, the average number of new hires per year was 3,367,250 whereas the average number of layoffs per year was 3,019,289, for a net gain of 347,961 new jobs per year. It is important to note that each new company employed approximately 6.2 workers,

[27] International Monetary Fund, World Economic Outlook, April 2016, https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx

[28] Bureau of Labor Statistics, Economic News Release, Table 8, Private sector establishment births and deaths, seasonally adjusted, retrieved 20 July 2017, http://www.bls.gov/news.release/cewbd.t08.htm

which means that micro-businesses or micro-organizations in larger businesses make up the vast majority of new businesses.

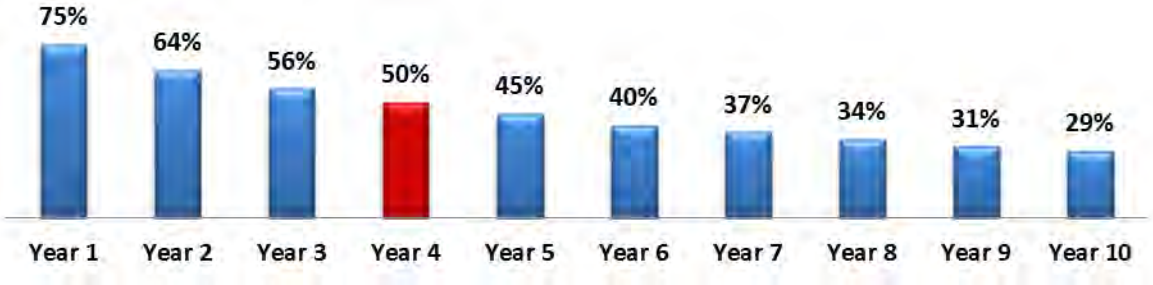
Startups are the seed corn of the economy. Without the planting and fertilization of these seedlings our economic fields would remain fallow. In terms of new starts (firms less than 1-year old), the BLS reports that the United States is now creating startup businesses at historically low rates, down from 16.5% in 1977 of all firms to 8% in 2014 (latest available data on new starts). Quoting the Wall Street Journal, if the U.S. were creating new firms at the same rate as in the 1980s, it would equate to more than "200,000 companies and 1.8 million jobs a year." [29]

According to the Kauffman Foundation analysis of the Census Bureau's Business Dynamic Statistics, most **city and state government policies that look to big business for job creation are doomed to failure** because they are based on unrealistic employment growth models. "It's not just net job creation that startups dominate. While older firms lose more jobs than they create, those gross flows decline as firm's age. **On average, one-year-old firms create nearly 1,000,000 jobs, while ten-year-old firms generate 300,000**. The notion that firms bulk up as they age is, in the aggregate, not supported by data."[30]

Much more can be done to extend the lifespan of fledgling businesses. Per the U.S. Small Business Administration, 50% of all startups remain in business for 5-years and 25% last 10-years.

Startup Business Success Rate Over Time

Source: Entrepreneur, Statistic Brain [31]



Research by Entrepreneur Magazine and Statistic Brain tends to agree with the SBA's lifespan predictions with 50% surviving through Year-4 and 29% through year-10. However, some industries are harder on startups than other industries. For example, information industry startup success rates through Year-4 are 37%, whereas finance, insurance, real estate, education, health and agriculture success rates are in the 56% to 58% range as shown below.

---

[29] Wall Street Journal, Sputtering Startups Weigh on U.S. Economic Growth, 23 October 2016, http://www.wsj.com/articles/sputtering-startups-weigh-on-u-s-economic-growth-1477235874?mod=djem10point

[30] Kauffman Foundation, The Importance of Startups in Job Creation and Job Destruction, Last Paragraph, 9 Sep 2010, http://www.kauffman.org/what-we-do/research/firm-formation-and-growth-series/the-importance-of-startups-in-job-creation-and-job-destruction

[31] Entrepreneur Magazine, Why Some Startups Succeed (and Why Most Fail), 18 February 2017, https://www.entrepreneur.com/article/288769, and Static Brain, Startup Business Failure Rate By Industry, January 2016, http://www.statisticbrain.com/startup-failure-by-industry

Startup Business Success by Industry

Source: Entrepreneur, Statistic Brain

Startup Success by Industry	% Operating After 4-Years
Finance Insurance and Real Estate	58%
Education and Health	56%
Agriculture	56%
Services	55%
Wholesale	54%
Mining	51%
Manufacturing	49%
Construction	47%
Retail	47%
Transportation, Communication and Utilities	45%
Information	37%

Startups fail for a host of reasons but in general most fail due to incompetence and lack of experience—both of which can be mitigated by the proper mentoring and lifelong learning programs.

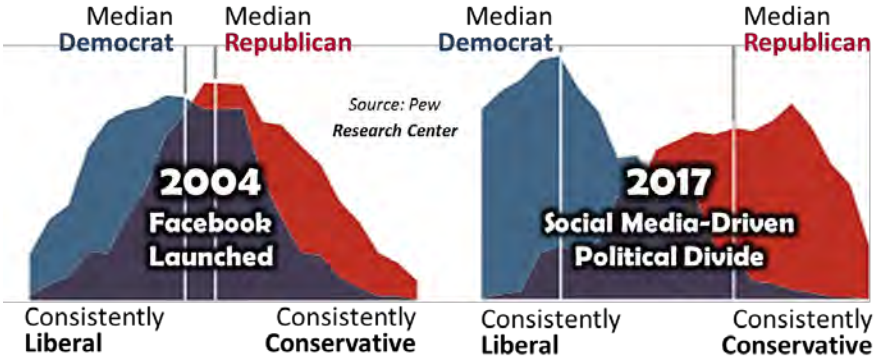
Both government and big business must play a much greater role in small business sustainment. Contrary to popular misconception, startups are more resilient than most people believe. Half of all new starts survive 5-years and one-quarter lasts 10-years. Unfortunately, American decision-makers and opinion-leaders talk a lot about the importance of small businesses and startups, but their approach to small business creation is both laisse-faire and misdirected. Virtually every government workforce development agency looks to academic and social enterprises as opposed to small business for jobs creation. As a result, many citizens pursue degrees, certifications, social skills training and well-written resumes that yield little success in landing a job because simply not enough jobs are available.

Government can play a significant support role in small business creation, especially if they underwrite the development and mass-production of highly-scalable startups, and nurture the health and productivity of small businesses in the same way government underwrites homebuilders and homeowner industries over the last fifty years via a number of government sponsored enterprises like Fannie Mae, Ginnie Mae and Freddie Mac. Government should also reduce regulatory and tax burdens/exemptions on small business startups until they mature. By giving small business a 5 to 10 year window to get established and grow, both the U.S. labor force and economy will benefit in the long-term. In addition, pro-small business incentives would attract more people to start a business.

Big business can play even a much greater role in small business development, especially in the emerging digital economy, which is ideally suited for startup businesses. America is blessed to be the home of network and information technology giants like Apple, HP, Facebook, Google, CISCO, Amazon, Microsoft, eBay and dozens of other network and digital platform giants. While these platform giants produce amazing technological advancements, foreign countries in Asia and Europe are applying these advancements to develop small businesses, labor forces and economies to a much greater degree than in the United States that is preoccupied with social media and entertainment.

Social Media-Driven Divisiveness

Source: Pew Research Center[32]



American advancements in social media transformed the world both positively and negatively depending on the ideology of its users. A recent political poll by the Pew Research Center, a Washington DC-based nonpartisan "fact tank" and opinion-polling institute, states that Republicans and Democrats are now much further apart ideologically than they were when social media made its debut in 2004. Today's partisan political divide is largely social media-driven. This phenomenon is not unique to America. Social media was used to ignite the 2011 Arab Spring sending the Middle East into chaos. In order to avoid a "global techlash"[33], America's platform giants need to invest more time, talent and money on mitigating the divisiveness of social media, managing network abuse (negative political advertising, foreign manipulation, hate speech, blocking, net neutrality, privacy, tax evasion, dark web, etc.), and advancing socially-responsible programs to help those in most in need.

As corporate citizens, leading American companies need to assume a much greater role in developing small businesses that are capable of competing and prospering in the emerging digital and today's traditional economies. From a Jobenomics perspective, CEOs should take the lead (i.e., the responsibility) for creating a minimum of 10 million net new U.S. jobs within the next decade via the creation of millions of small, micro and self-employed American businesses.

The 10 million job goal is in reality a very meager objective compared to the efforts of major platform companies in China. For example, founder and former CEO Jack Ma committed Alibaba to create 100 million global micro-entrepreneur jobs in China this decade in the emerging digital economy. Alibaba is now investing $2 billion of their profits in training locals, providing free computers, arranging startup financing, and establishing a logistical supply chain to connect 100,000 cities and villages to its e-commerce platform by 2018. Alibaba's Ant Financial loan division is providing low interest micro business loans to over 100 million Chinese microbusinesses, with emphasis on impoverished rural communities. [34] [35] [36]

---

[32] Pew Research Center, U.S. Politics & Policy, The Partisan Divide on Political Values Grows Even Wider, 5 October 2017, http://www.people-press.org/2017/10/05/1-partisan-divides-over-political-values-widen/

[33] The Economist, Chaining Giants, Internet firms face a global techlash, 10 August 2017, https://www.economist.com/news/international/21726072-though-big-tech-firms-are-thriving-they-are-facing-more-scrutiny-ever-internet-firms

[34] NING, 100millionjobscrisis, Video, 23 November 2009, http://yunusasia.ning.com/video/100millionjobcrisis-1

In summary, from a strategic perspective regarding economic and workforce development, the United States needs to place more attention on (1) elevating the vital importance of the private sector labor force, (2) improving the balance between working and non-working populations, (3) enhancing labor force gains and mitigating labor force losses, (4) increasing the effect of jobs on GDP, and (5) reinforcing the paramount importance of U.S. small business and job creation.

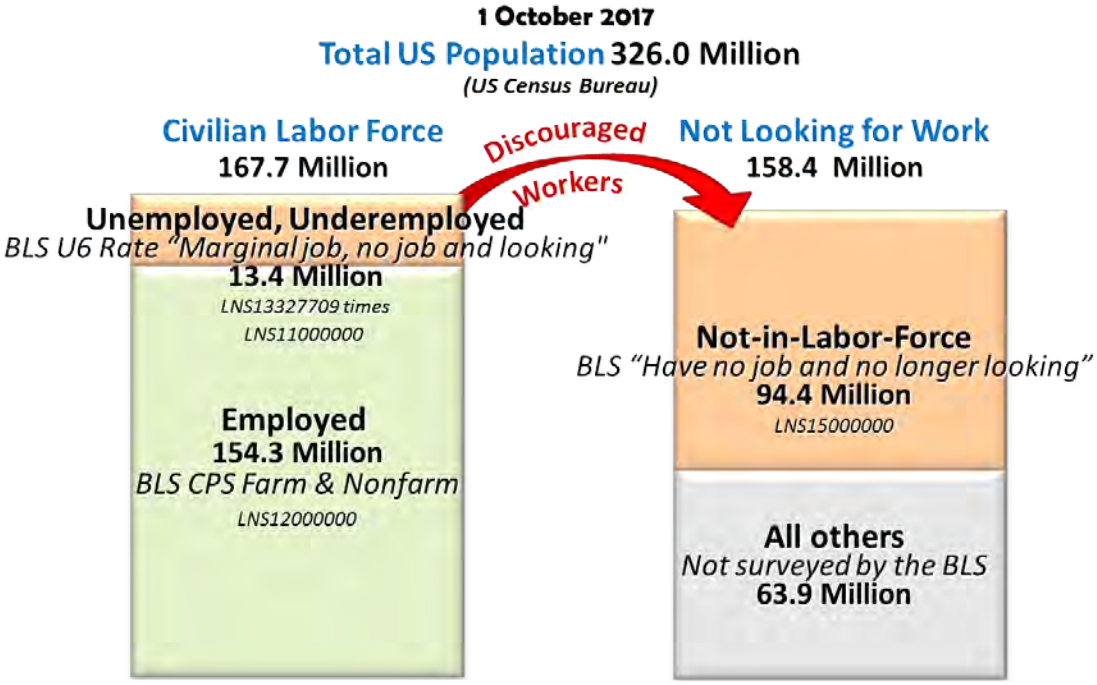
[35] Cheung Kong Graduate School of Business Knowledge Center (Beijing), Will Ant Financial Become Wildly Successful Like Taobao?, 24 May 2016, http://knowledge.ckgsb.edu.cn/2016/05/24/internet-finance/will-ant-financial-become-wildly-successful-like-taobao/?utm_campaign=shareaholic&utm_medium=email_this&utm_source=email

[36] For more information on China's quest for network and digital economy dominance, see: http://jobenomicsblog.com/chinas-digital-economy-quest/

Current U.S. Employment and Labor Force Statistics

The BLS uses two monthly surveys that measure employment levels and trends: the Current Population Survey (CPS), also known as Household data, and the Current Employment Statistics (CES) survey, known as the Payroll or Establishment data. CPS and CES estimates have distinct employment definitions and methods. Generally speaking, the CES estimates approximately 7 million fewer employees than the CPS since CES data excludes agriculture and related employment, the unincorporated self-employed, unpaid family and private household workers and workers absent without pay from their jobs. Both surveys include only civilian employees in Government employment and exclude uniformed members of the armed services. CPS Household data can be found in the BLS Employment Situation Summary CPS Household Data "A" tables and CES Establishment Data "B" tables.[37] Unless stated otherwise, this report uses CES Establishment data since it provides greater labor force detail on the 13 industrial groups (industries) and the 130 industries in the United States.

U.S. Labor Force Overview



A basic knowledge on how the U.S. government defines labor force and accounts for the different labor force categories is essential to understanding labor force statistics and interpreting fact from fiction. The basic concepts involving employment and unemployment are straight forward: [38]

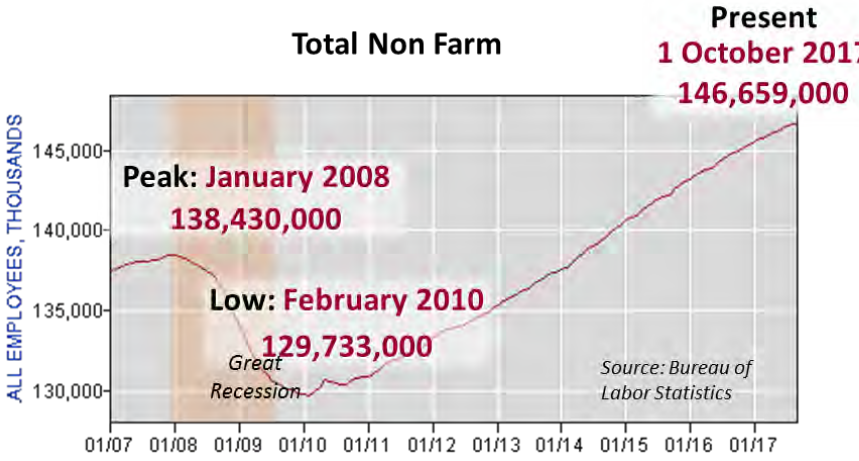
- People with jobs are **employed**. As calculated by the Current Population Survey, the U.S. labor force consists of 154.3 million employed people in the non-farm private sector (goods and services) and government (federal, state and local).

[37] BLS, Employment Situation Summary, "A" and "B" Tables, https://www.bls.gov/news.release/empsit.nr0.htm
[38] BLS, How the Government Measures Unemployment, http://www.bls.gov/cps/cps_htgm.htm#unemployed

- People are **unemployed** if they do not have a job, have actively looked for work in the prior 4 weeks, and are currently available for work. Marginally employed and underemployed personnel, who are actively looking for work, are reported as a subset of the unemployed category, and generally include part-time workers who work less than 35 hours per week.
- Able-bodied adults who are neither employed nor unemployed are not in the labor force. Those who have no job and are no longer looking for a job are counted as **Not-in-Labor-Force**.
- **All Others.** Remaining citizens who are not included in the previous three categories are classified as All Others by Jobenomics. The BLS does not survey and report on most of the groups that comprise this category that includes children, elderly, disabled, are institutionalized (approximately 4 million citizens in correctional institutions, mental institutions, detention facilities, skilled nursing facilities, hospice facilities and other long-term care living arrangements), serving in the U.S. armed forces (approximately 1.3 million on active duty) or agriculture workers and farm hands (approximately 2 million).

Recent U.S. Employment History. As shown below, prior to the Great Recession, peak employment was 146,659,000 and continued its downward slide to a low of 129,733,000 in February 2010 for a net loss of 8.7 million jobs. Since then, the United States has recovered lost jobs and achieved a new employment peak today of 146,404,000 for a net gain of 16.7 million jobs from the post-recession low and 16.6 million jobs since the beginning of the decade. As a side note, President Obama created 10.5 million jobs during the 8-years of the Obama Administration, and President Trump has created 1.1 million new jobs during the 6-months of the Trump Administration.

Recent U.S. Employment History



Jobs Gained/Lost (Millions)

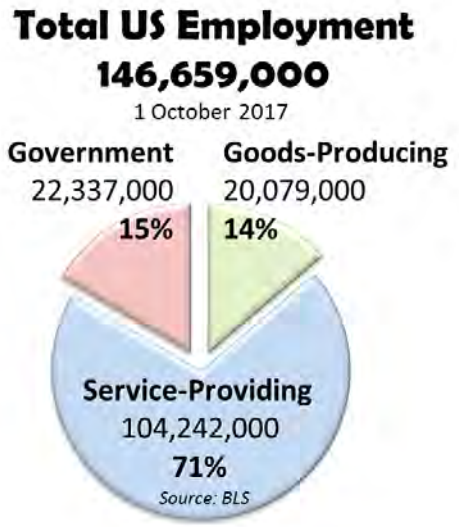
Peak to Low	-8.7
This Decade	16.9
Low to Present	16.9
Obama Tenure *(96 months)*	10.5
Trump Tenure *(9 months)*	1.3

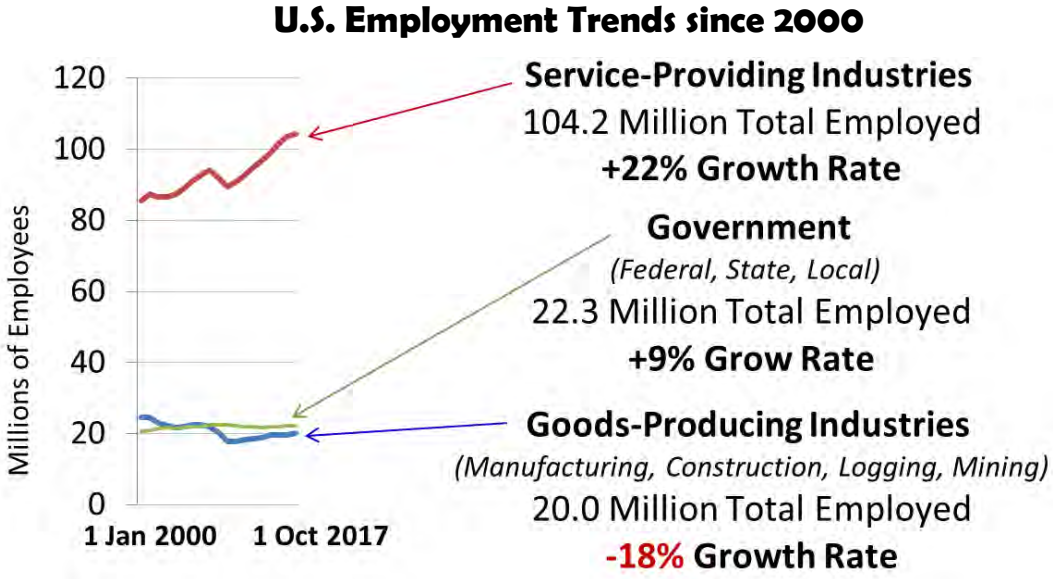
While the steady improvement in employment gains is positive news, employment growth has been very slow compared to past recoveries. As discussed throughout this report and the Jobenomics U.S. Labor Force & Unemployment Report, these employment gains are largely offset by (1) massive voluntary labor force departures of discouraged citizens who simply quit looking for work, (2) the transition from a standard full-time workforce to a part-time contingency workforce, and (3)

population gains of over 24 million new American citizens since the beginning of the Great Recession.[39]

Of the 146,659,000 employed Americans,

- 71% work in seven private sector service-providing industries (Professional & Business Services; Education & Health Services; Trade, Transportation & Utilities; Financial Activities; Leisure & Hospitality; Information; and Other Services)
- 15% work at three government levels (Federal, State and Local)
- 14% are employed in three private sector goods-producing industries (Manufacturing, Construction and Mining & Logging)





Since year 2000, U.S. employment and employment growth has been mainly in service-providing industries that have grown by 22% with 104.2 million Americans now employed. Government employs 22.3 million and has grown at a rate of 9% over the same time period. However, government employment has decreased in the last several years and is likely to continue to do so due to other budget priorities. U.S. goods-producing industries declined 18% since year 2000, now employing 20.0 million people—matching the goods-producing industry employment levels in June 1964 when the U.S. population was 180 million Americans. In 1964, 11% of the U.S. population was employed by goods-producing industries, compared to only 6% of the population today.[40]

[39] Note: the U.S. population in 2008 was 301 million compared to 325 million today. .
[40] Calculation: Adjusted Goods-Producing Jobs to 1964 Population Level=19.6M/180M=10.9%, Today=19.6M/324.7M=6.0%

Total Job Creation in The 2010s

Employment *Source: BLS*	1 Jan 2010	1 Oct 2017	Change	% of New Jobs Created
Total US	129,778,000	146,659,000	**16,881,000**	**100.0%**
Total Private Sector	107,296,000	124,322,000	**17,026,000**	**100.9%**
Total Government	22,482,000	22,337,000	**(145,000)**	**-0.9%**

Monthly Average (93 Months) **181,516**

Jobs Needed (Traditional Benchmark) ***250,000***

Shortfall of Jobs Needed **27%**

The U.S. private sector created 17,026,000 jobs and government (Federal, State and Local) lost 145,000 jobs, for a net gain of 16,881,000 net new jobs this decade. The monthly average over this 93-month period is 181,516 new jobs per month. While the U.S. economy has enjoyed employment growth without any major downturns (perhaps the most significant factor considering a slow-growth post-Great Recession economic recovery), the United States produced only 73% (27% shortfall) of 250,000 jobs needed per month as measured against the benchmark as advocated by most economists for a robust recovery.

Private Sector and Government Job creation in the 2010s

Employment *Source: BLS*	1 Jan 2010	1 Oct 2017	Change	% of New Jobs Created
Total Private Sector	107,296,000	124,322,000	**17,026,000**	**100.0%**
Private Sector Service-Providing	89,504,000	104,243,000	**14,739,000**	**86.6%**
Private Sector Goods-Producing	17,792,000	20,079,000	**2,287,000**	**13.4%**

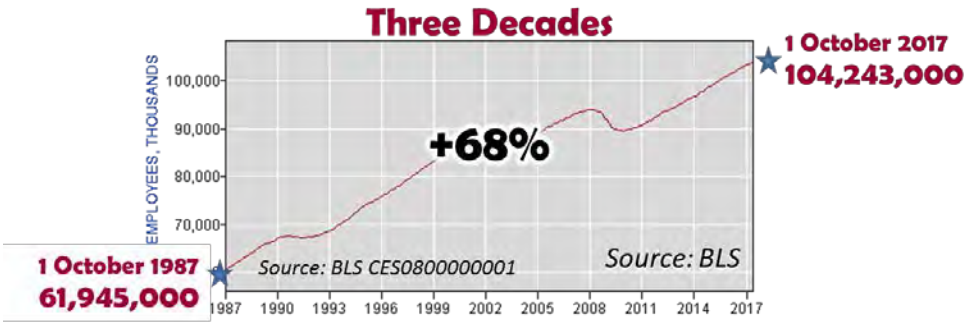
Total Government	22,482,000	22,337,000	**(145,000)**	**100.0%**
Federal Gov't	2,831,000	2,806,000	**(25,000)**	**17.2%**
State Gov't	5,150,000	5,100,000	**(50,000)**	**34.5%**
Local Gov't	14,501,000	14,431,000	**(70,000)**	**48.3%**

Within the private sector, American service-providing industries created 14,739,000 jobs (86.6% of private sector jobs) compared to the goods-producing industries with 2,287,000 jobs (13.4%).

The government sector lost 145,000 jobs this decade. Local government lost the majority of jobs (70,000 jobs or 48.3% of total government job losses), followed by State government (50,000 or 34.5%) and Federal government (25,000 or 17.2%). Most of the Local government losses consisted of teachers, firefighters and police. Note: U.S. Armed Forces (which are also downsizing) are not included in these government figures.

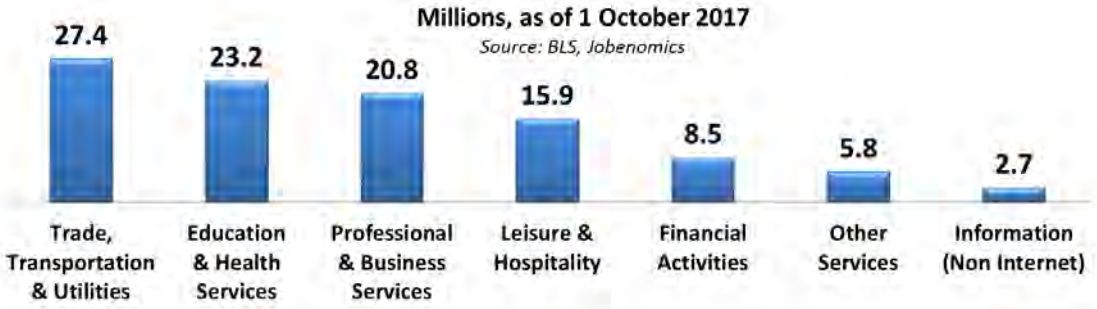
Service-Providing Industries Trends

U.S. Service-Providing Industries Trends



Service-Providing industries grew 68% over the last three decades. As of 1 October 2017, Service-Providing industries employment was 104,243,000. Since 1 January 2010, this sector gained 14,739,000 or 86.6% of all new jobs. The remaining 13.4% was created by private sector goods-producing industries. Government produced no new jobs.

U.S. Service-Providing Industries Employment Size

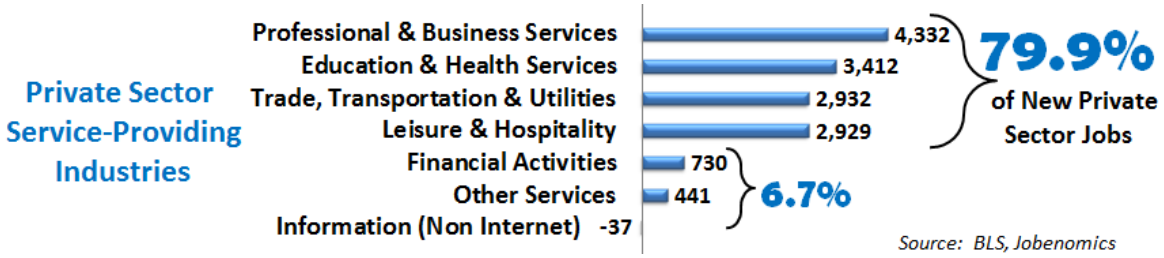


The U.S. Service-Providing Industries now employs people across seven industries ranging from a high of 27.4 million employees in the Trade, Transportation & Utilities industry to a low of 2.7 million in the Information (Non Internet) industry.

U.S. Service-Providing Industries Employment Growth

Of the service-providing industries, six of seven industries gained jobs since the Great Recession. The four fastest growing industries in terms of employment are Professional & Business Services (26.3%), Leisure & Hospitality (22.6%), Education & Health Services (17.2%) and Trade, Transportation & Utilities (12.0%). These vitally important four industries created 79.9% of all new jobs this decade. The non-Internet Information industry (e.g., newspaper and book publishing) lost 37,000 jobs.

U.S. Service-Providing Industries Trends This Decade
1 January 2010 to 1 October 2017,
Thousands of Jobs



A breakdown of each service-providing industry, ranked in order by the number of new jobs created between 1 January 2010 and 1 October 2017 (90 months) are:

1) **Professional & Business Services**: 4,332,000 new jobs or 29% of the 14,739,000 new jobs produced by all U.S. service-providing industries this decade

2) **Education & Health Services**: 3,412,000 new jobs or 23% of total

3) **Trade, Transportation & Utilities**: 2,932,000 new jobs or 20% of total

4) **Leisure & Hospitality**: 2,929,000 new jobs or 20% of total

5) **Financial Activities**: 730,000 new jobs or 5% of total

6) **Other Services:** 441,000 new jobs or 3% of total

7) **Information (Non-Internet)**: -37,000 jobs losses or 0% of new jobs total

Professional and Technical Services created 4,332,000 jobs and grew by 26% this decade. Computer and technical services were outstanding performers with growth rates of 46% and 46% creating 647,000 and 452,000 new jobs, respectively.

Management of Companies and Enterprises added 430,000 jobs and grew by 23% so far this decade. This sector is comprised of approximately 51,000 American private business firms. Some firms operate by holding securities and other equity interests of companies for the purpose of owning a controlling interest and influencing management decisions. Others oversee and manage establishments belonging to other companies or enterprises. These management companies typically administer strategic or planning decisions.

Administrative and Waste Services created 2,143,000 new jobs and grew by 30% this decade. However, most of these jobs involved lower wage, part-time contingent workforce positions. Temporary help workers grew by 60% creating 1,160,000 temporary jobs alone. Services to commerical buildings and residential dwellings, which are dominated by independent contractors and contingent workers, added 419,000 new jobs.

Professional & Business Services Trends This Decade

Source: BLS CES6000000001, Seasonally Adjusted

	1-Jan-10 Jobs (000s)	1-Oct-17 Jobs (000s)	New Jobs (000s)	% Growth
Professional and Business Services	**16,475**	**20,807**	**4,332**	**26%**
Professional and Technical Services	**7,426**	**9,187**	**1,760**	**24%**
Legal Services	1,109	1,129	19	2%
Accounting and Bookkeeping Services	898	1,010	112	13%
Architectural and Engineering Services	1,292	1464	172	13%
Specialized Design Services	116	140	24	21%
Computer Systems Design and Related Services	1,420	2,067	647	46%
Management and Technical Consulting Services	999	1,453	454	45%
Scientific Research and Development Services	617	712	95	15%
Advertising and Related Services	408	488	79	19%
Other Professional and Technical Services	568	725	157	28%
Management of Companies and Enterprises	**1,848**	**2,278**	**430**	**23%**
Administrative and Waste Services	**7,200**	**9,343**	**2,143**	**30%**
Administrative and Support Services	6,849	9,343	2,494	36%
Office Administrative Services	*403*	*528*	*124*	*31%*
Facilities Support Services	*135*	*145*	*10*	*8%*
Employment Services (Non-Temporary)	*630*	*665*	*35*	*5%*
Temporary Help Services	*1,894*	*3,054*	*1,160*	*61%*
Business Support Services	*811*	*916*	*105*	*13%*
Travel Arrangement and Reservation Services	*188*	*214*	*26*	*14%*
Investigation and Security Services	*779*	*919*	*139*	*18%*
Services to Buildings and Dwellings	*1,739*	*2,157*	*419*	*24%*
Other Support Services	*269*	*329*	*60*	*22%*
Waste Management and Remediation Services	351	416	65	18%

Education & Health Services includes Education Services and Healthcare and Social Assistance, which collectively grew at a rate of 17% this decade adding 3,412,000 jobs.

The Educational Services sector added 562,000 jobs and grew at a rate of 18% this decade. Note: most educational services are provided by non-state/local government educators and trainers.

Healthcare and Social Assistance sector added 2,851,000 jobs—the largest of any single private industry sector but not the fastest growing at 17%.

The Healthcare subsector is the second largest producer of jobs of all subsectors with 2,163,000 new positions. (The Food Services and Drinking Places subsector was first with 2,351,000 jobs.) Outpatient, healthcare practitioners and home healthcare occupations grew at the fastest rates, while established medical offices and hospitals added the most staff. Nursing care and mental health facilities were the lowest performers largely due to the high cost of managed and skilled care facilities as well as a lack of government action on the growing mental health epidemic. However, Community

Care Facilities that provide in-home residential care for the elderly grew at rate of 25% and added 185,000 new jobs due to the rapidly growing cadre of retiring baby boomers who can afford in-home services and increased government funding for community facilities. Jobenomics forecasts that a "direct-care" industry will continue to grow significantly in the future due largely due to retiring baby boomers that prefer to retire at home or cannot afford managed or skilled care.

The Social Assistance sector created 692,000 jobs with Individual and Family Services subsector providing almost all the jobs (665,000) of the Social Assistance total. Individual and Family Services includes child and youth services, and services for the elderly and persons with disabilities. Vocational Rehabilitation Services was the worst performer with a loss of 72,000 jobs and a negative 18% growth rate. Vocational Rehabilitation Services are comprised of federal-state programs that help people who have physical or mental disabilities get or keep a job, or helping people with disabilities find meaningful careers. From a Jobenomics perspective, this trend must be reversed.

Education & Health Services Trends This Decade

Source: BLS CES5000000001, Seasonally Adjusted

	1-Jan-10	1-Oct-17	New Jobs (000s)	% Growth
	Jobs (000s)			
Education and Health Services	**19,805**	**23,217**	**3,412**	**17%**
Educational Services	**3,108**	**3,670**	**562**	**18%**
Healthcare and Social Assistance	**16,697**	**19,547**	**2,851**	**17%**
Healthcare	**13,655**	**15,818**	**2,163**	**16%**
Ambulatory Healthcare Services	5,886	7,359	1,473	25%
Offices of Physicians	*2,255*	*2,609*	*354*	*16%*
Offices of Dentists	*815*	*946*	*131*	*16%*
Offices of Other Health Practitioners	*656*	*912*	*256*	*39%*
Outpatient Care Centers	*629*	*912*	*282*	*45%*
Medical and Diagnostic Laboratories	*224*	*261*	*37*	*17%*
Home Healthcare Services	*1,059*	*1,418*	*358*	*34%*
Other Ambulatory Healthcare Services	*247*	*297*	*50*	*20%*
Hospitals	4,671	5,127	457	10%
Nursing and Residential Care Facilities	3,102	3,332	229	7%
Nursing Care Facilities	*1,651*	*1,628*	*-23*	*-1%*
Residential Mental Health Facilities	*564*	*622*	*59*	*10%*
Community Care Facilities For the Elderly	*728*	*913*	*185*	*25%*
Other Residential Care Facilities	*161*	*169*	*8*	*5%*
Social Assistance	**3,038**	**3,730**	**692**	**23%**
Individual and Family Services	1,640	2,305	665	41%
Emergency and Other Relief Services	139	169	30	21%
Vocational Rehabilitation Services	410	338	**-72**	**-18%**
Child Day Care Services	849	918	70	8%

Trade, Transportation & Utilities includes Wholesale Trade, Retail Trade, Transportation and Warehousing and Utilities sectors that are growing relatively slowly at 12% this decade adding 2,932,000 jobs.

Trade, Transportation & Utilities Trends This Decade

Source: BLS CES4000000001, Seasonally Adjusted

	1-Jan-10 Jobs (000s)	1-Oct-17 Jobs (000s)	New Jobs (000s)	% Growth
Trade, Transportation and Utilities	**24,473**	**27,405**	**2,932**	**12%**
Wholesale Trade	**5,475**	**5,933**	**458**	**8%**
Durable Goods	2,727	2,966	239	9%
Nondurable Goods	1,943	2,059	116	6%
Electronic Markets and Agents and Brokers	805	908	103	13%
Retail Trade	**14,325**	**15,809**	**1,485**	**10%**
Motor Vehicle and Parts Dealers	1,617	2,013	396	24%
Automobile Dealers	*1,004*	*1,303*	*300*	*30%*
Other Motor Vehicle Dealers	*130*	*153*	*23*	*17%*
Auto Parts, Accessories and Tire Stores	*483*	*557*	*74*	*15%*
Furniture and Home Furnishings Stores	439	484	45	10%
Electronics and Appliance Stores	510	502	-8	-1%
Building Material and Garden Supply Stores	1,138	1,297	159	14%
Food and Beverage Stores	2,802	3,067	265	9%
Health and Personal Care Stores	983	1,048	65	7%
Gasoline stations	819	941	122	15%
Clothing and clothing accessories stores	1,333	1,321	-12	-1%
Sporting goods, hobby, book, and music stores	580	601	21	4%
General Merchandise Stores	2,921	3,131	210	7%
Department Stores	*1,459*	*1,275*	*-184*	*-13%*
Other General Merchandise Stores	*1,462*	*1,856*	*394*	*27%*
Miscellaneous Store Retailers	767	834	67	9%
Nonstore Fetailers	417	570	153	37%
Transportation and Warehousing	**4,117**	**5,111**	**993**	**24%**
Air Transportation	461	494	33	7%
Rail Transportation	211	206	-5	-2%
Water Transportation	63	66	3	5%
Truck Transportation	1,241	1,471	230	19%
Transit and Ground Passenger Transportation	419	483	64	15%
Pipeline Transportation	43	47	4	9%
Scenic and Sightseeing Transportation	28	36	8	28%
Support Activities for Transportation	538	670	132	25%
Couriers and Messengers	493	677	184	37%
Warehousing and Storage	621	961	341	55%
Utilities	**556**	**553**	**-3**	**-1%**

In the Wholesale Trade and Retail Trade sectors, Automotive Dealers, Nonstore Retailers (online and big box) and Other General Merchandise Stores were the outstanding performers. Department

Stores, being the greatest loser at -13%, which are being replaced by warehouse clubs, supercenters and online retailers.

In the Transportation and Warehousing sector, Air, Rail, Water Transportation industries suffered downturns. Whereas Truck Transportation, Couriers and Messengers (e.g., FedEx and UPS), and Transporation Support Activities (mechanics, drivers, dispatchers, material movers) scored gains. Surprisingly, the highest performer in the entire sector was Warehousing and Storage that created 341,000 new jobs and posted a growth rate of 55%—the bulk new jobs included freight, stock and material movers and drivers. The proliferation of self-storage businesses has significantly contributed to the growth of this industry.

The weakest performer in the TT&U industry was the Utilities sector that employs 556,000 but downsided this decade by 3,000 jobs. The Utilities sector comprises establishments engaged in the provision of the following utility services: electric power, natural gas, steam supply, water supply, and sewage removal.

Leisure & Hospitality includes the Arts, Entertainment and Recreation, and Accommodation and Food Services sectors that grew collectively at 23% this decade adding 2,929,000 jobs, of which 87% was in the Food Services and Drinking Places subsector.

The Arts, Entertainment and Recreation sector produced 373,000 new jobs of which 71% of new jobs (264,000) were created by Amusements, Gambling and Recreation establishments. Most of these jobs are relatively low paying contingent workforce jobs.

Accommodation and Food Services sector was dominated by increased employment at restraurants, bars and mobile food services. The Food Services and Drinking Places subsector posted the largest number of new jobs, 2,351,000, of any subsector in America. The vast majority of the jobs are part-time gig/contingent workers such as cooks, wait staff, bartenders and bussers. The rise in these occupations is largely due to a slow growing economy which could rapidly reverse itself if a financial reset occurs.

Leisure & Hospitality Trends This Decade

Source: BLS CES7000000001, Seasonally Adjusted

	1-Jan-10	1-Oct-17	New Jobs (000s)	% Growth
	Jobs (000s)			
Leisure and Hospitality	**12,944**	**15,873**	**2,929**	**23%**
Arts, Entertainment and Recreation	**1,891**	**2,264**	**373**	**20%**
Performing Arts and Spectator Sports	392	460	68	17%
Museums, Historical Sites and Similar Institutions	128	169	40	31%
Amusements, Gambling and Recreation	1,371	1,635	264	19%
Accommodation and Food Services	**11,053**	**13,609**	**2,556**	**23%**
Accommodation	1,749	1,954	205	12%
Food Services and Drinking Places	9,305	11,655	2,351	25%

Financial Activities includes Finance and Insurance, and Real Estate and Rental and Leasing that collectively grew at a subpar rate of 9% this decade adding 730,000 jobs.

The Finance and Insurance sector produced 183,000 new jobs with over half in insurance-related activities. Commercial Banking was the worse performer losing 8,000 jobs largely due to automation of tellers and staff as well as industry consolidation. Credit Intermediation had the highest growth at 21%. Intermediation involves the matching of lenders with savings to borrowers who need money, loan or mortgage. The rise of corporate and individual debt, such as school loans, is fueling the rapid rise of this area.

In the Real Estate and Rental and Leasing sector, Real Estate subsector (agents, brokers, property managers and office staff) contributed 196,000 (79%) out the total of 247,000 new jobs in this sector. Lessors of Nonfinancial Intangible Assets (e.g., patents, trademarks, brand names, franchise agreements) was the worst performer, losing 10% of its workforce during this decade. Jobenomics considers this significant since it is a signal of declining business and workforce innovation and entrepreneurialism.

Financial Activities Trends This Decade

Source: BLS CES5500000001, Seasonally Adjusted

	1-Jan-10 Jobs (000s)	1-Oct-17 Jobs (000s)	New Jobs (000s)	% Growth
Financial Activities	**7,743**	**8,473**	**730**	**9%**
Finance and Insurance	**5,784**	**6,267**	**483**	**8%**
Monetary Authorities - Central Bank	21	19	-2	-9%
Credit Intermediation and Related Activities	2,551	2,658	107	4%
Depository Credit Intermediation	1,734	1,717	-17	-1%
Commercial Banking	*1,306*	*1,314*	*8*	*1%*
Nondepository Credit Intermediation	559	628	70	12%
Activities Related To Credit Intermediation	259	313	54	21%
Securities, Commodity Contracts, Investments, Funds, Trusts	852	949	97	11%
Insurance Carriers and Related Activities	2,361	2,642	282	12%
Real Estate and Rental and Leasing	**1,959**	**2,206**	**247**	**13%**
Real Estate	1,411	1,606	196	14%
Rental and Leasing Services	522	577	54	10%
Lessors of Nonfinancial Intangible Assets	26	23	-3	-11%

Other Services grew at a meager rate of 8% this decade adding 441,000 new jobs. Personal and Laundry Services added 228,000 jobs. Personal services included occupations like pet-care, photofinishing and parking attendents. Laundry Services include washing, drycleaning and linen and uniform supply. Repair and Maintenance added 160,000 jobs mainly in the computer, office machine, communication equipment, industrial machinery and other electronic and precision equipment related areas. Membership Associations and Organizations, which employ almost 3 million people, created only 53,000 jobs and grew by only 2%. Unless established membership organizations reach out and gain new members from Generation Y (Millennials) and Generation Z (Screenagers) this subsector is likely to decrease significantly over the next decade.

Other Services Trends This Decade

Source: BLS CES8000000001, Seasonally Adjusted

	1-Jan-10 Jobs (000s)	1-Oct-17 Jobs (000s)	New Jobs (000s)	% Growth
Other Services	**5,320**	**5,761**	**441**	**8%**
Repair and Maintenance	1,132	1292	160	14%
Personal and Laundry Services	1,264	1,492	228	18%
Membership Associations and Organizations	2,923	2,977	53	2%

Information (non-Internet). Information was the only service-providing industry that downsized this decade. Most internet-related activities are accounted in other industries if the services are integral or indigneous to the industry's industries. The Information industry is comprised of establishments engaged in: producing and distributing information and cultural products, providing the means to transmit or distribute these products as well as data or communications, and processing data. The Information sector groups three types of establishments: (1) those engaged in producing and distributing information and cultural products; (2) those that provide the means to transmit or distribute these products as well as data or communications; and (3) those that process data. Cultural products are those that directly express attitudes, opinions, ideas, values, and artistic creativity; provide entertainment; or offer information and analysis concerning the past and present. Included in this definition are popular, mass-produced, products as well as cultural products that normally have a more limited audience, such as poetry books, literary magazines, or classical records.

Advanced web-based and digitial economy services are replacing the traditional publishing, broadcasting and telecom-munications industries, which downsized by a total of 263,000 jobs this decade (as shown in red) with the majority 176,000 in the telecommunications subsector. Increased popularity in Motion Picture and Sound Recording Industries added 31,000 jobs albeit with only a 9% growth rate.

Other Information Services include internet service providers, web search portals, data processing companies, and the information services industries provided the fastest growth in the industry with the sector growing a rate of 100%—the highest growth rate of any sector—adding 137,000 jobs.

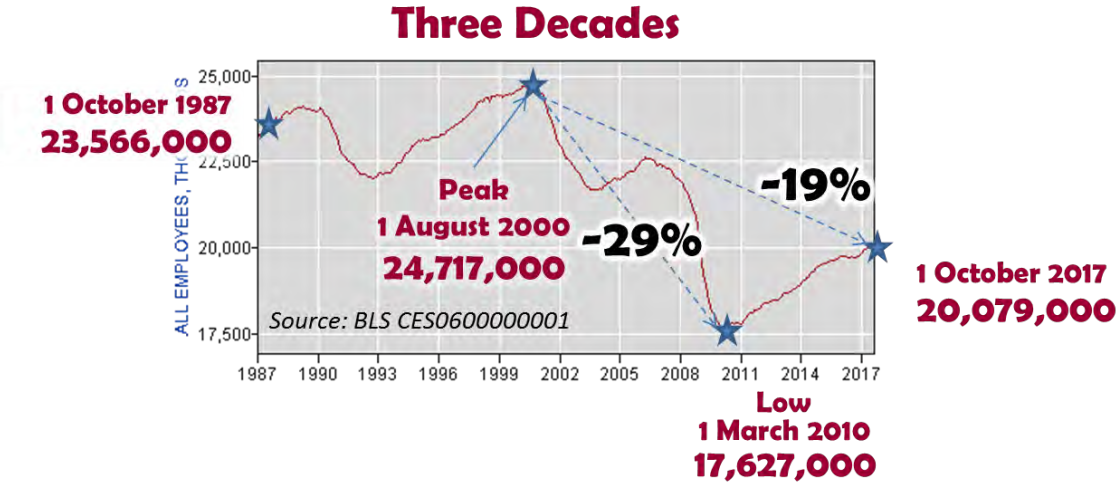
Information Industry Trends This Decade

Source: BLS CES5000000001, Seasonally Adjusted

	1-Jan-10 Jobs (000s)	1-Oct-17 Jobs (000s)	New Jobs (000s)	% Growth
Information	**2,744**	**2,707**	**-37**	**-1%**
Publishing Industries, Except Internet	770	717	-53	-7%
Motion Picture and Sound Recording Industries	364	395	31	9%
Broadcasting, Except Internet	294	260	-34	-12%
Telecommunications	934	758	-176	-19%
Data Processing, Hosting and Related Services	246	304	59	24%
Other Information Services	137	273	137	100%

Goods-Producing Industries Trends

U.S. Goods-Producing Industries Trends



Over the last three decades, the U.S. goods-producing industry workforce peaked 24,717,000 in August 2000 (all-time post-WWII peak was 25.2 million in August 1979), declined 29% to a post-recession low of 17,627,000 in March 2010, and rebounded to 20,079,000 As of 1 October 2017. Notwithstanding, the goods-producing industry workforce is still 19% lower than its recent August 2000 peak.

U.S. Goods-Producing Industry Sector Employment Size

Millions, 1 as of 1 October 2017

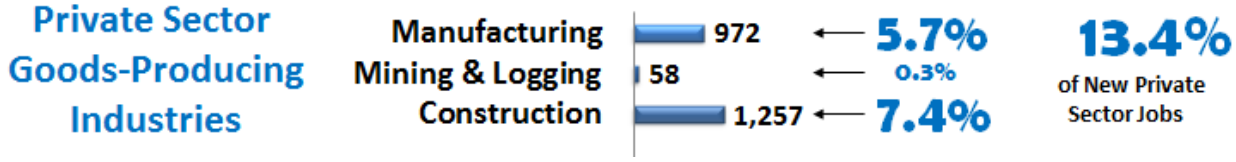
Source: BLS, Jobenomics

In terms of goods-producing industry jobs, Manufacturing employs 12,396,000 citizens, followed by Construction with 6,896,000 and Mining & Logging with 715,000.

U.S. Goods-Producing Industries Trends This Decade

1 January 2010 to 1 October 2017

(Thousands of Jobs)



Since the beginning of this decade, goods-producing industry produced 13.4% of all new jobs. The Construction industry created 7.4% of all new U.S. jobs, followed by Manufacturing with 5.7% and Mining & Logging with 0.3%.

Employment statistics for the goods-producing industry sector are ranked by the number of new jobs created, from highest to lowest, between 1 January 2010 and 1 July 2017 (90 months):

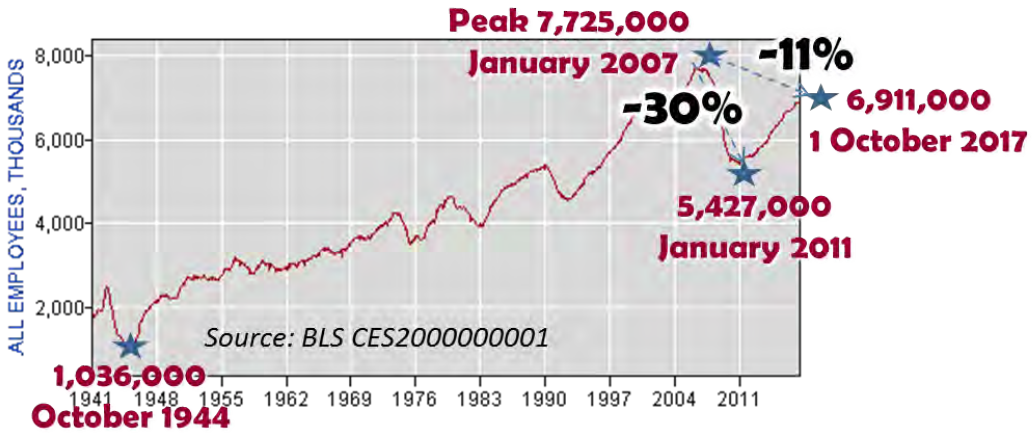
1) **Construction:** 1,242,000 new jobs or 56% of the total of 20,007,000 new jobs produced by the U.S. goods-producing industries
2) **Manufacturing:** 913,000 new jobs or 42% of the goods-producing industries
3) **Mining & Logging:** 52,000 new jobs or 2% of the three goods-producing industries

U.S. Goods-Producing Industry Sector Employment Growth

The fastest growing goods-producing industry is Construction (22.2%) followed by Mining & Logging (8.7%) and lastly Manufacturing (8.5%).

Construction. Even though the construction industry shows signs of employment growth, the construction sector is slowly scratching its way back after a rapid rise during the go-go years in the 1990s and the housing bubble in the early 2000s.

U.S. Construction Industry Employment since WWII



In January 2007, peak construction employment was 7,725,000 and rapidly declined by 30% during the Great Recession to a low of 5,427,000 in January 2011. As of 1 October 2017, construction employment was 6,911,000, still down 11% from its employment peak in 2007.

U.S. Construction Industry Employment Last 12 Months

Over the last 12 months, construction had 9 months of employment gains, 2 months of zero gains, and 1 month that posted job losses, for a net increase of 184,000 jobs. 184,000 jobs equates to 9.2% of the 2,004,000 new jobs produced across all 13 industry groups over the last year.

Construction Industry Trends This Decade

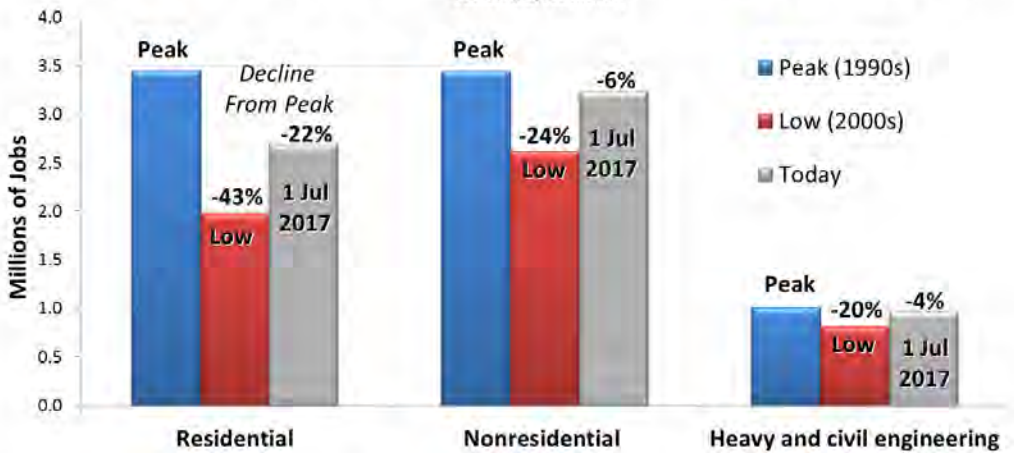
Source: BLS CES7000000001, Seasonally Adjusted

	1-Jan-10 Jobs (000s)	1-Oct-17 Jobs (000s)	New Jobs (000s)	% Growth
Construction	**5,654**	**6,911**	**1,257**	**22%**
Construction of Buildings	**1,263**	**1,528**	**265**	**21%**
Residential Building	596	757	161	27%
Nonresidential Building	667	771	104	16%
Specialty Trade Contractors	**3,581**	**4,411**	**829**	**23%**
Residential Specialty Trade Contractors	1,522	1,936	414	27%
Nonresidential Specialty Trade Contractors	2,059	2,475	416	20%
Heavy and Civil Engineering Construction	**810**	**973**	**163**	**20%**

Over the post-recession recovery period (1 January 2010 to 1 July 2017), construction produced 1,257,000 new jobs. Of the five subsectors shown, residential construction (Residential Building and Residential Speciality Trade Contractors) grew the fastest at 27% producing a total of 575,000 new jobs (161 + 414). Nonresidential contractors (Nonresidential Building and Nonresidential Speciality Trade Contractors) grew between 16% and 20% during this period and produced 511,000 new jobs (104 + 407). Heavy construction added 163,000 new jobs.

U.S. Construction Industry Recovery

From Peak Employment, to Great Recession Low, thru Q3 2017



Residential construction employment still remains the hardest hit construction sector with a 43% decrease from its pre-recession peak (3,451,000) to its post-recession low (1,982,000). As of 1 October 2017, residential construction employment is still below its pre-recession peak by 22% with total employment of 2,693,000 workers. Nonresidential construction fared slightly better with losses of 24% from peak and 6% today with 3,246,000 workers. Heavy and civil engineering fared the best losing 20% from peak and down only 4% today with a total of 973,000 employed personnel. If President Trump's proposed $1 trillion infrastructure plan gets enacted, the Heavy and Civil Engineering sector would benefit mightily.

Residential construction usually leads economic recoveries. However, during the post-Great Recession recovery, residential construction still has a long way to go, especially in the arena of new home starts, which is the bread-and-butter domain in the construction industry.

Annual Rate of Residential Sales and Starts

	New Home Sales	New Home Starts	Existing Home Sales	
2005	**1,265,451**	**2,051,633**	**7,003,227**	***2005***
2006	1,088,952	1,857,338	6,640,159	
2007	817,637	1,423,639	5,297,177	
2008	531,851	976,775	4,268,237	
2009	392,760	614,100	4,290,376	
2010	330,206	**580,442**	**4,207,974**	***Post Recession Lows***
2011	**308,603**	607,483	4,260,997	
2012	357,230	754,123	4,594,251	
2013	419,230	904,640	5,001,686	
2014	437,641	988,574	4,946,633	
2015	491,927	1,088,843	5,177,534	
2016	573,677	1,176,054	5,483,688	
Q3 2017	**611,597**	**1,203,104**	**5,596,296**	***Q3 2017***
2005 to Low	**-76%**	**-72%**	**-40%**	
2005 to Q3 2017	**-52%**	**-41%**	**-20%**	

As shown, according to a U.S. Home Sales analysis of U.S. Census Bureau data, American New Home Sales dropped precipitously (76%) during the Great Recession and is still significantly below (52%) the level of new home sales achieved in 2005 prior to the recession.[41] New Home Starts suffered a similar fate decreasing 72% during the recession and is still down 41% from 2005 levels. Existing Home Sales was the least effected, down 40% and 20% respectively. From a labor force perspective, of the three categories, Existing Home Sales is the sector that provides the least amount of construction jobs and New Home Starts is the sector that provides the greatest amount of jobs.

[41] U.S. Debt Clock.org, U.S. Home Sales 2017, http://www.usdebtclock.org/home-sales.html and U.S. Census Bureau, Table 14. Homeownership Rates for the U.S. and Regions: 1965 to Present, http://www.census.gov/housing/hvs/data/histtabs.html

Surprisingly, during the first 9-months of the Trump Administration, New Home Starts dropped from 1,268,000 to 1,127,000, a decrease of 11% or 141,000 units per month. [42] The possibility of a Fed interest rate hike or a future financial downturn is likely to further limit the tepid upward progress of New Home Starts even more by making mortages more expensive. Damage caused by recent hurricanes and wildfires will likely further depress New Home Starts, but will increase the specialty trade workforce during the recovery process and restoration of existing homes and businesses.

Shortages of skilled-labor and building materials is likely to further stifle construction industry labor force growth as well as the economics of the construction industry writ large.

According to the Q3 2017 USG Corporation and U.S. Chamber of Commerce Commercial Construction Index (CCI), the construction industry is reportedly "strong and healthy" since more than three quarters of contractors report steady or increasing backlogs. However, CCI lists a number significant challenges "from sentiment on workforce readiness to the ability to recruit and retain adequate staff levels, from prioritizing the skill set required for today's jobsite, and the ability of a contractor to staff a future pipeline of work". [43]

As reported by the CCI, 60% of surveyed construction contractors report difficulty finding skilled workers in Q3 2017 due to the ongoing skilled labor shortage. In hurricane disaster locations, like Houston, skilled labor shortages are especially acute. Moreover, the shortage of contruction materials is driving up the cost and financial feasibility of new construction and renovation projects.

As of the most recent BLS Job Openings and Labor Survey (JOLTS), U.S. construction companies have 247,000 open jobs (4.0% of the total of 6,200,000 unfilled U.S. jobs).[44] The skilled labor shortage is largely responsible for these vacancies.

The National Association of Homebuilders (NAHB) estimates that construction jobs that have been left unsatisfied are largely due to the skilled labor shortage and the "graying" of the existing workforce. The NAHB believes that the hispanic workforce is "key to combating the labor shortage", which "is projected to account for 74% of the growth in the workforce from 2010-2020, a 20% increase from the previous decade."[45] Ostensibility, many of these workers are likely to be foreign-borne workers who are facing greater and greater immigration challenges.

As the skilled labor force shortage becomes more acute in the construction industry, many residential homebuilders and nonresidental builders are turning to modular construction and robotics to fill the

[42] U.S. Census Bureau, Business and Industry, Time Series/Trend Charts, New Residential Construction, Annual Rate for Housing Units Started, http://www.census.gov/construction/nrc/historical_data/

[43] The Q3 2017 USG Corporation + U.S. Chamber of Commerce Commercial Construction Index, https://www.uschamber.com/sites/default/files/q3_cci_9.14.17.pdf

[44] BLS, Job Openings and Labor Turnover, Table 7. Job openings levels and rates by industry and region, not seasonally adjusted, https://www.bls.gov/news.release/jolts.toc.htm

[45] National Association of Homebuilders, 30 April 2017, http://nahbnow.com/?s=skilled+labor+shortage & Hispanic Workforce Key to Combating Labor Shortage, 9 November 2017, http://nahbnow.com/2015/11/hispanic-workforce-key-to-combating-labor-shortage/

skilled workforce gap. Following automated manufacting and robotics used in the automative industry, a plethora of indoor homebuilding factories such as Blueprint Robotic Inc. new production facility in Baltimore that not only build modular walls, floors and roofs, but finished products like kitchens. [46] Marriott, the biggest hotel operator, recently opened a 97-room, 52-module, three-story modular Fairfield Inn & Suites in Folsom, California, that was built by Guerdon Modular Buildings Inc. The 52-modules, including fixtures (HVAC, plumbing, electrical), furniture (beds, sofas, chairs, pictures), and equipment (TVs, refrigerators) were built, installed and appointed in less than six weeks at a substantial savings in labor costs.[47]

Another issue facing the residential construction industry is changing attitudes towards home ownership and the price of new homes.

According to the U.S. Census Bureau, the average price of a new home in the United States jumped 190% in the last three decades, from $133,500 in September 1987, from $177,500 in September 1997, to $292,200 in September 2007 to $385,200 in September 2017.[48] The average home price in metropolitan areas (where the jobs are) is much higher. San Francisco median home price is up to $1.5 million. In Manhatten, it is $1.4 million for a condo. Census Bureau data calculates that the 2016 median income for the 164 million U.S. wage earners was only $36,586. [49] This meager amount of income puts homeownership out of reach for most Americans.

The Census Bureau also reports that U.S. home ownership rates have dropped to its lowest level since 1989 and down 8.0% from its high in 2004.[50] This drop is due to less affordable housing, more restrictive lending, fewer first-time buyers who are renting rather than buying, and people who have dropped out of the housing market. On the other hand, many economists believe that the residential housing market has bottomed as indicated by the upward trend of housing unit starts from April 2009 to today. Bullish economists also point to decreasing unemployment rates and "pent up demand" as reasons to expect a construction boom that could create as many as 250,000 construction jobs if residential starts reach peak levels in the mid-2000s—again assuming that a skilled labor force is available to fill the jobs, which apparently is not the case today.

In conclusion, Jobenomics forecasts that the residential construction industry will not produce a significant number of new jobs for the remainder of this decade due to a myriad of national and global economic uncertainties including: lack of skilled-labor, automation of the workforce, large numbers of affordably-priced existing homes for sale, and changing attitudes to the value of homeownership by the next generation of home buyers. Due to the uncertain economy and

[46] Blueprint Robotic Inc., http://www.blueprint-robotics.com/video/
[47] Guerdon Modular Buildings, Folsom Fairfield Inn & Suites | Folsom, California, http://www.guerdonmodularbuildings.com/our-work/folsom-fairfield-inn-suites/
[48] U.S. Census Bureau, Median and Average Sales Prices of New Homes Sold in United States, https://www.census.gov/construction/nrs/pdf/uspricemon.pdf
[49] U.S. Census Bureau, Person Income in 2016, PINC-05, Work Experience in 2016--People 15 Years Old and Over by Total Money Earnings in 2016, Age, Race, Hispanic Origin, and Sex, https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pinc/pinc-05.html
[50] U.S. Census Bureau, Table 14. Homeownership Rates for the U.S. and Regions: 1965 to Present, http://www.census.gov/housing/hvs/data/histtabs.html

government deficits, nonresidential and heavy construction are also unlikely to produce significantly higher numbers of domestic jobs with the possible exception of the Trump Administration's proposed $1 trillion infrastructure development program. Regarding the skilled-labor shortage, more citizens need to be subjected to skills-based training and certification programs that can be accomplished in months as opposed to years.[51]

Mining & Logging. U.S. Mining & Logging consists of mining (coal, metal ore, nonmetalic mineral mining and quarrying), oil and gas extraction, support activities for mining and logging.

From 1 January 2010, the Mining & Logging industry employment skyrocketed from 663,000 jobs to a peak of 904,000 jobs by September 2014, an increase of 54% largly due to the Exploration & Support subsector associated with the fracking industry boom.

From the September 2014 peak to the end of the Obama Administration, the U.S. Mining & Logging industry lost a total of 236,000 jobs, or 26% of their labor force, largely due to low oil prices, international competition and the environmental/climate change movement.

In fulfillment of President Trump's campaign promises, this subsector has rebounded with a gain of 53,000 jobs during his first 9-months in office.

Mining & Logging Trends This Decade

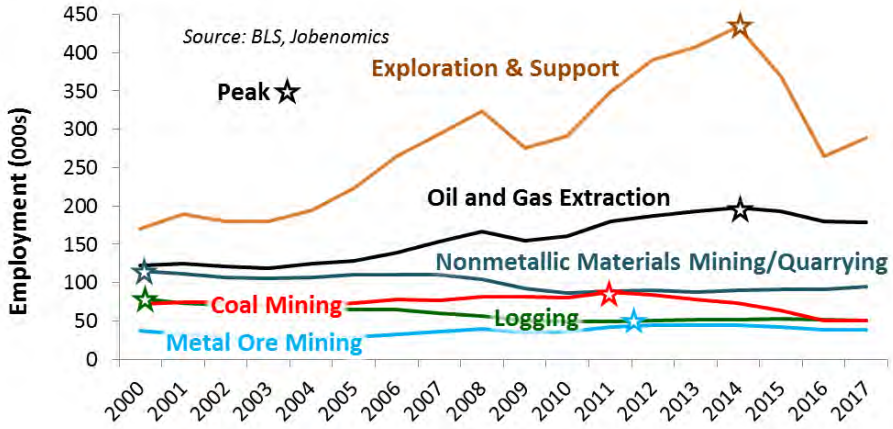
Source: BLS CES1000000001, Seasonally Adjusted

	1-Jan-10 Jobs (000s)	1-Oct-17 Jobs (000s)	New Jobs (000s)	% Growth
Mining and Logging	**663**	**721**	**58**	**9%**
Logging	**49**	**49**	**1**	**1%**
Mining	**614**	**672**	**58**	**9%**
Oil and Gas Extraction	155	181	26	17%
Mining, Except Oil and Gas	200	187	**-13**	**-6%**
Coal Mining	*78*	*52*	***-26***	***-33%***
Metal Ore Mining	*34*	*39*	***5***	***15%***
Nonmetallic Mineral Mining and Quarrying	*88*	*95*	***8***	***9%***
Support Activities for Mining	259	305	45	17%

Despite the roller coaster ride , Mining and Logging created a total 58,000 new jobs this decade with a growth rate of 9%. While 9% is meager, it is significant considering the headwinds facing this industry. With the exception of coal mining (which is now beginning to rebound) all other subsectors showed growth with oil, gas and support activities posting the largest gains of 17%. Jobenomics forecasts that the Mining and Logging industry will see substantial gains in the near future as America becomes more energy independent and business conscious.

[51] Note: Jobenomics Community-Based Business Generators offer over 9,000 online, federally-certified, skills-based training and certification programs, many of which are in construction fields.

U.S. Mining (Oil, Gas, Minerals, Coal) & Logging Sector Employment Trends



Stability and predictability underpin prosperous industries as well as their labor forces. Since the Mining & Logging industry's labor force tends to be generational (children following their parent's footsteps) and communal (small communities usually located in remote areas), constancy becomes even more relevant. Unfortunately, all six Mining & Logging subsectors have all experienced significant instability due to gyrations over the last 17-years. The extent of these gyrations are listed in the order of the most serious to the least serious, ranging from a high of 61% for the Logging subsector to a low of 11% for the Oil & Gas Extraction activities.

- **Logging** has been in a steady decline since its high of 80,600 loggers in February 2000 to 49,200 as of 1 October 2017, a loss of 31,400 jobs (**61% downturn**) largely due to the downturn in the housing sector, new environmental restrictions on logging in federal forests and foreign imports (Canadian government-subsidied lumber products). However, since the new Administration took office, logging has added 3,700 jobs.

- **Coal Mining** employed 73,700 people in January 2001 and increased steadily to a peak of 89,700 in January 2012. From peak to the end of the Obama Administration, coal miners lost 40,000 jobs **(45% downturn**) largely due to President Obama's alledged "War on coal" and "Clean Power Plan", increasingly stringent Environment Protection Agency regulations targeted at coal-fired power plants, and competition for alternative sources of energy generation such as natural gas and renewables. President Trump's commitment to coal miners, rolling back the Clean Power plan and exiting the Paris Climate Change Agreement will be beneficial to coal mining industries and workers, but is not likely to return coal to its former heights due to the reduction of worldwide coal consumption as well as domestic production of Chinese and Indian coal reserves. Since the Trump Administration took office, 2,400 coal miners have returned to work, which equates to an upturn of 5% more jobs. Today, the Coal Mining subsector employes 52,100 people—not a lot on a national scale but a lifeline to the small rural and financially-depressed communities where the mines are located.

- **Mining Exploration and Support** activities employed 157,700 in January 2000, 445,400 in September 2014 (peak) and 304,500 As of 1 October 2017. Since peak, the high-flying exploration and support industry lost 146,900 jobs (**32% downturn**) largely due to drop in oil prices, unconventional oil and gas (fracking) industry downturn and international competition.

Since the Trump Administration took office, 47,000 new jobs have been added largley due to an improving economy and a more stable business environment.

- **Nonmetallic Materials Mining and Quarrying** companies have been in decline since its high of 115,200 in January 2000 to 95,400 as of October 2017, a loss of 19,800 jobs (**17% downturn**). Companies in this industry develop mine sites, mine and quarry nonmetallic minerals (sand, gravel, stone, clay, and refractory materials) and provide related support services, and separate minerals from waste. Since the Trump Administration took office, 2,200 new jobs have been added largley due to an improving economy and a more stable business environment. If Congress passes a major infrastructure program, this subsector should benefit significantly, especially in terms of jobs due to the high-touch labor component of this industry.

- **Metal Ore Mining** activities employed 38,700 in January 2000, 45,700 in March 2013 (peak) and 39,200 as of October 2017. This sector has undergone a decline from peak with the loss of 6,500 jobs (**14% downturn**) largely due to stringent EPA environmental regulations and lower commodity prices. However, this may change as commodity prices (such as gold and silver) increase in proportion to the threat of a financial crisis and or a downturn in stock markets. Copper prices are also likely to increase as the digital economy and electronically-connected consumer devices increase. Since the new Administration took office, this subsector has gained only 1,000 jobs. While the Energy Technology Revolution should increase demand for metal ores, advances in raw materials reclamation systems (recycling) will stifle growth in traditional mining activities. For example, the United States aluminum production is now approximately 40% from metal ores and 60% from reclaiming materials from end-of-life alumunium cans and appliances. This trend is likely to increase in the future as end-of-life materials reclamation systems are installed across America. Note: Jobenomics Urban Mining initiative is at the forefront of monitizing urban waste streams and using the profits for microbusiness and job creation.[52]

- **Oil and Gas Extraction** employed 126,100 in January 2000; 200,800 in September 2014 (peak) and 181,000 as of October 2017. Since peak this sector suffered a loss of 11,600 jobs (**10% drop**) largely due to the drop in oil prices and competition in the unconventional oil and gas sector from foreign oil producers, namely OPEC, Russia and the newly unsanctioned state-run Iranian producers. Since the new Administration took office, this subsector has gained only 3,700 jobs but should increase substantially if the Administration's energy independence, offshore energy licencing and pipeline initiatives are enacted. In addition, the unconventional oil and gas sector (fracking) has reached financial equilibrium, can quickly reactivate dormant wells with more efficient technology that can produce more oil and gas from rock, and improved waste water treatment systems to become more compliant with environmental regulations and concerns. The near-term prospects for the conventional oil and gas sector is not so clear. The major oil companies are focused on maintaining profitabiliy, diversifying into parallel sectors (e.g., liquid natural gas), and deferring or canceling $620 billion of projects.

[52] Jobenomics Urban Mining, https://jobenomicsblog.com/?s=Urban+Mining and eCyclingUSA (a Jobenomics originated company for materials reclamation of end-of-life electronics and appliances), http://ecyclingusa.com/

2017 will be a pivotal year for the U.S. Mining & Logging industry as it adapts to the major forces that have dramatically changed the landscape of their industry: OPEC restructuring, China hegemon, the Trump Administration's pro-business, anti-environomental activism initiatives, the advent of electrically-powered vehicles (EVs) and the so-called death of the internal combustion engine.

- **OPEC.** Over the last several years, OPEC, the producer of approximately 40% of the world's oil production with 80% of the world's share of crude oil reserves, planned to drive non-OPEC oil producers out of business by depressing oil prices. To a degree, this plan worked. The economies of Russia (10.5 million barrels per day production) and Brazil (3 million barrels per day) crashed largely due to the loss of this revenue stream. U.S. oil producers (9.2 million barrels per day) were also shaken by the OPEC onslaught directed at both the conventional the unconventional oil industries. The OPEC plan had a number of positive unintended consequences for the U.S. oil and gas including: giving rise to a shift from oil to natural gas, eliminating less efficient companies, creating greater American resolve for energy independence, advancing renewable energy initiatives and reversing decades of legislation that limited U.S. crude oil exports. From a Jobenomics perspective 2016 was the year the old U.S. oil and gas industry survived and a new one was born.

  2017 is likely to be the year that the OPEC plan of over-producing and depressing oil prices succumbs. Saudi Arabia, which is the largest oil producer and dominant force of the dozen OPEC members[53], has finally agreed with their OPEC members for a "rebalancing process" to cut oil production and let prices rise. OPEC members agreed to cut production by 1.2 million barrels per day for six months beginning from the start of the 2017 in a bid to reduce the glut of oil supplies on the shore up prices. Reduced OPEC production will alleviate the glut of oil on the world market, resulting in higher oil prices, which will give inpetutus for renewed U.S. onshore and offshore expansion.

  Jobenomics does not see a major crude oil price increase for a least a year, but is optimistic that the U.S. unconventional oil and gas industry, dominated by independent contractors and contingency workers, will be able to reconstitute quickly as the energy outlook brightens. New industries, like the exporting of liquidified natural gas, and resumption of major offshore exploration projects by the major conventional oil and gas companies will provide new employment opportunities for the U.S. oil and gas workforce.

- **China.** Over the last decade, China has been a major importer of U.S. raw materials from the Mining & Logging industry. 2016 was a pivotal year because of the slowdown in the Chinese economy and Beijing's shift of emphasis to greater domestic production, exploration and self-reliance. 2017 will be a pivotal year for the U.S. Mining & Logging industry as it realigns itself for a greater reliance on domestic and other foreign buyers. U.S. commodity (oil, metals and coal) companies, long-addicted to exporting to China, are now focusing on other emerging

[53] OPEC oil producers include: Saudi Arabia (10.7 million barrels per day), Iraq (4.2 mmbd), UAE (2.7 mmbd), Kuwait (2.5 mmbd), Venezuela (2.4 mmbd), Nigeria (2.4 mmbd), Qatar (2.1 mmbd), Angola (1.7 mmbd), Algeria (1.7 mmbd), Oman (1.0 mmbd), Indonesia (10.9 mmbd) and Libya (0.5 mmbd).

markets, like India, and adjusting to the new normal, which includes viewing China as a near-peer competitor rather than a voracious buyer of American commodities.

In the metal ore mining sector, China is spending hundreds of billions of dollars in mining projects around the world in South America, Africa and the Middle East. China is also building multibillion dollar Urban Mining mining centers to extract raw materials from domestic and imported electronic waste. In the oil and gas sector, China is tripling its strategic oil reserves from 250 million barrels in storage capacity to 900 million, which will exceed the total capacity of the U.S. strategic petroleum reserve storage of 725 million barrels. China is also increasing its oil production capacity (currently 4.1 million barrels per day) domestically and aggressively pursueing international exploration to reduce its dependence on foreign imports. A large part of the Chinese military buildup in the South China Sea is due to Southeast Asia's vast offshore oil and gas fields. U.S. coal exports to China have also dropped precipitously from 9 million metric tons in 2012 to ¼ million in 2015. Perhaps the only exception to the rule, is U.S. logging exports of forest products (hardwood lumber and softwood log exports) to China.

- **Environmental Activitism versus the Trump Admistration.** While Jobenomics believes that climate change is a very real and serious challenge, climate change activitism is becoming more of a call-to-arms than a call-to-action. As a result, the U.S. Mining & Logging industry has become the cause célèbre for heated debate about the evils of ravaging the planet's non-renewable resources.

  2016 was a pivotal year in which U.S. environmental activistists were successful in championing domestic and international agreements on climate change from the Obama Administration's Clean Power Plan to the UNFCC' historic climate change agreement.

  2017 has been a pivotal year in which President Trump dismantled the Clean Power Plan and exited from the Paris Climate Change Agreement. Manmade climate change is happening. Unfortunately, the Paris Climate Change Agreement was largely political theater with the United States on center stage championing the ability of renewable energy to reduce toxic greenhouse gases and committing the United States to reduce "economy-wide" emissions by as much as 28% by 2025 via the implementation of ultra-clean renewable energy sources.[54] This ambitious goal was "a bridge way too far" given the United States inability to successfully implement enough new renewable energy sources by 2025 to retire traditional "dirty" sources of fuel.

  According to the U.S. Energy Information Agency's Annual Energy Outlook 2017, a report generated during the pro-renewable and anti-fossil fuel Obama Administration, by the 2025 Paris Agreement deadline the United States is forecast to transition **only 3.1%** of its energy consumption from traditional to renewable fuels (shown below). Even more surprisingly, by

[54] United Nations Framework Convention on Climate Change (UNFCCC), United States NDC Registry, retrieved 5 June 2017, http://www4.unfccc.int/ndcregistry/PublishedDocuments/United%20States%20of%20America%20First/U.S.A.%20First%20NDC%20Submission.pdf

mid-century (2050), Americans are projected to transition from traditional sources by only 6.1% from fossil to renewable fuels.[55] According to this data, it is obvious that the United States was never really capable of implementing its "nationally determined contributions" (NDC) as proclaimed on the United Nations Framework Convention on Climate Change (UNFCCC) NDC website.[56] A 3% reduction in fossil fuel consumption and burning will not generate a 28% decline in greenhouse emissions by 2025. .

U.S. Total Energy Consumption: 2017, 2025 and 2050

Source: EIA AEO 2017 Table 1	2017	2025		2050	
Total Consumption (Quadrillion Btu)	**97.3**	**100.2**		**106.7**	
Petroleum and Other Liquids	38.2%	36.9%	*% Change 2017 - 2025*	36.1%	*% Change 2017 - 2050*
Natural Gas	29.6%	29.1%		33.4%	
Coal	14.5%	13.4%		9.2%	
Nuclear	8.5%	8.1%		6.0%	
Traditional Sources	**90.8%**	**87.5%**	**-3.3%**	**84.7%**	**-6.1%**
Renewable Energy	**9.2%**	**12.5%**	**3.3%**	**15.3%**	**6.1%**
Conventional Hydroelectric Power	2.6%	2.9%		2.8%	
Biomass	2.8%	2.9%		2.9%	
Mainly Wind & Solar	3.4%	6.2%		9.1%	
Other (e.g. hydrogen, imports)	0.3%	0.4%		0.4%	

Consequently, it should not be too surprising that the Trump Administration, which inherited an unrealistic NDC commitment, would act in the manner that it did by pulling out of the Paris Agreement. Contrary to popular opinion, President Trump's walking away from the Paris Accord is likely to be a positive action from a climate change perspective. President Obama's evangelical and activist approach to the renewable energy promise brought the world to the climate change table in Paris. President Trump's hardnosed approach has now renewed the climate change debate with a new sense of urgency and energy. Perhaps, now Americans can get down to a realistic climate change strategy with measurable and achievable milestones.

2017 is also a pivotal year for the Oil and Gas Extraction subsector. President Trump's executive orders supporting the Keystone XL and Dakota Access pipelines is equivant to a tectonic shift from the previous administration's position on pipeline expansion. The $4 billion, 1,179-mile Keystone XL pipeline from Alberta, Canada to Steele City, Nebraska will carry 830,000 barrels of oil per day, create as many as 28,000 construction jobs, and decrease dependence on Middle East oil. The 1,172-mile Dakota Access Pipeline will carry 470,000 barrels of oil per day from the Bakken shale oil fields in northwest North Dakota and to the oil tank farm near Patoka, Illinois.

[55] U.S. Energy Information Agency's Annual Energy Outlook 2017, Table 1, Total Energy Supply, Disposition, and Price Summary, https://www.eia.gov/outlooks/aeo/

[56] United Nations Framework Convention on Climate Change (UNFCCC), United States NDC Registry, retrieved 5 June 2017, http://www4.unfccc.int/ndcregistry/PublishedDocuments/United%20States%20of%20America%20First/U.S.A.%20First%20NDC%20Submission.pdf

In addition to oil pipelines, new natural gas pipelines are economic lifelines to some of the most underserved communities in America. For example, the $4 billion, 713-mile Rover natural gas pipeline will ship 3.25 billion cubic feet per day (enough to power 30 million homes via natural gas-fired power plants that produce cleaner energy than older coal-fired plants) from remote communities in West Virginia, Eastern Ohio and Western Pennsylvania. The Appalachian Marcellus and Utica gas fields are often dubbed the "Saudia Arabia of natural gas" because hold a century's worth of gas reserves. For the first time in 60-years, the United States became a net exporter of natural gas in 2017. This trend is expected to continue and grow providing many more jobs in communities that desperately need them.

2017 is also be the year that California's aggressive renewable energy plan should begin to bear fruit. In his 2015 Inaugural Address, Governor Brown announced three ambitious new 2030 goals for California: increase from 33% to 50% electricity derived from renewable sources; reduce automotive petroleum by up to 50%, and increase building efficiency and clean heating fuels by 100%. These enormously bold and disruptive goals are well underway. America will soon be able to see how transformative California's green initiatives will be, and the impact that they will have on California's economy and workforce.

For the most part, Jobenomics is pleased at the progress that California is making in renewable technology implementation. Jobenomics is even more pleased that California has shifted focus from spending 95% of its R&D budget on reducing emissions on coal-fired power plants to a more balanced approach where 50% is now spent on customer on-site generation and energy storage as advocated in the comprehensive Jobenomics Energy Technology report. As stated in this report, "Jobenomics believes that America should strive to be demand-driven where every building and every community is energy sufficient—able to produce and store the energy it needs—at the point-of-consumption." By producing and storing at the point-of-consumption, California will likely facilitate the creation of millions of new local jobs and small businesses that will be dedicated to installing and servicing these point-of-use systems. [57]

Jobenomics hopes that the California experiment will bear fruit, but believes that combatting climate change with renewable energy will be less successful in other states that do not have as much sunshine, sustainable winds and unencumbered land. To achieve climate change goals, a balance of renewables, cleaner fossil fuels, nuclear and energy efficiency is needed.

- **Electrically-powered vehicles.** The International Energy Associtation (IEA) Global EV Outlook 2016 report states that 1.26 million electric vehicles (EVs) are in use worldwide, up from 45,000 EVs in 2011 and a few hundred in 2005. By 2020, IEA and other sources (e.g., Paris Climate Change Accord) project 20 million EVs and 100 million EVs by 2030. As a result of these projections, a number of countries are considering banning internal combustion engines entirely. Norway's motor vehicles are already 25% EV and are projected to reach 100% by 2025. The United Kingdom, France, Germany and India are looking at 2030 as 100% battery-electric vehicle goals, thereby eliminating all fossile-fueled powered vehicles.

[57] Jobenomics, Energy Technology Revolution report, 18 June 2015, http://jobenomicsblog.com/energy-technology-revolution/

Other countries are taking a wait-and-see approach since EV will require a public charging infrastructure equal to the number of gas stations currently serving the internal combusion community. There are 168,000 retail locations in the U.S. that sell fuel to the public compared to 16,000 public electric vehicle charging stations. Other competing advanced fuels (such as hydrogen), cultural biases (Americans love their cars) and significant improvement in battery economics, scale, and technology are also considerations for taking a more cautious approach to banning internal combustion powered transportation.

While EVs maybe a threat to petroleum producers in the far-term, they present near-term opportunities for global metal ore mining companies, especially EVs powered by lithium ion batteries. While lithium (a rare energy efficient metal), gets top billing, other metals like nickel, cobalt, manganese, aluminum, iron and phosphate play integral roles in lithium ion batteries. There are a number of different lithium-ion battery cathodes being produced for today's electronic vehicles including NCA (Lithium Nickel Cobalt Aluminum Oxide) for Tesla vehicles, NMC (Lithium Nickel Cobalt Manganese Oxide) for Chevrolet's Bolt, and NMC–LMO (Lithium Manganese Oxide) for the Nissan Leaf. [58] Tesla, Bolt and Leaf batteries contain 10% to 15% lithium by weight, compared to 15% to 50% cobalt, and 30% to 70% nickel. [59]

According to Elon Musk, Tesla's founder, nickel is the most important metal by mass in lithium-ion battery cathodes. Other types of lithium-ion batteries being produced for other electric vehicle applications, such as Unmanned Aerial Vehicles (drones) include LMO (Lithium Manganese Oxide), LFP (Lithium Iron Phosphate) and LNMO (Lithium Nickel Manganese Spinel). [60] While the United States possess limited nickel and lithium reserves, it has unparalleled production capacity. Tesla's new Nevada-based Gigafactory is projected to produce as many lithium ion batteries as the rest of world's total current battery production.

In summary, Jobenomics asserts that the Mining & Logging industry is as valuable to national sovereignty as the other domestic goods-producing industries. 2017 will be a privotal year as the industry adjusts to the new normal. From a national standpoint, leaving hundreds of trillions of dollars of natural resources lay fallow in or under the ground does not make sense from an economic or security point of view, especially when America has a industry that can extract these resources in an increasingly environmentally friendly way.

[58] Targray, Cathode Active Materials, Active materials for li-ion batteries including NCA, NMC, LFP, LMO & LCO Cathodes, https://www.targray.com/li-ion-battery/cathode-materials/cathode-active-materials
[59] Visual Capitalist, Nickel: The Secret Driver of the Battery Revolution, 30 October 2017, http://www.visualcapitalist.com/nickel-secret-driver-battery-revolution/
[60] Battery University, Powering Unmanned Aerial Vehicles, http://batteryuniversity.com/learn/article/types_of_lithium_ion

Manufacturing. The industrial age is following the same path as the agricultural age. Less than a century ago, the vast majority of Americans worked on a farm or ranch. Today, it is about 2% of the U.S. population. In 1960, U.S. manufacturing employed 28% of U.S. nonfarm workers. Today, manufacturing employs only 5.7% of U.S. nonfarm workers.

Manufacturing Trends This Decade

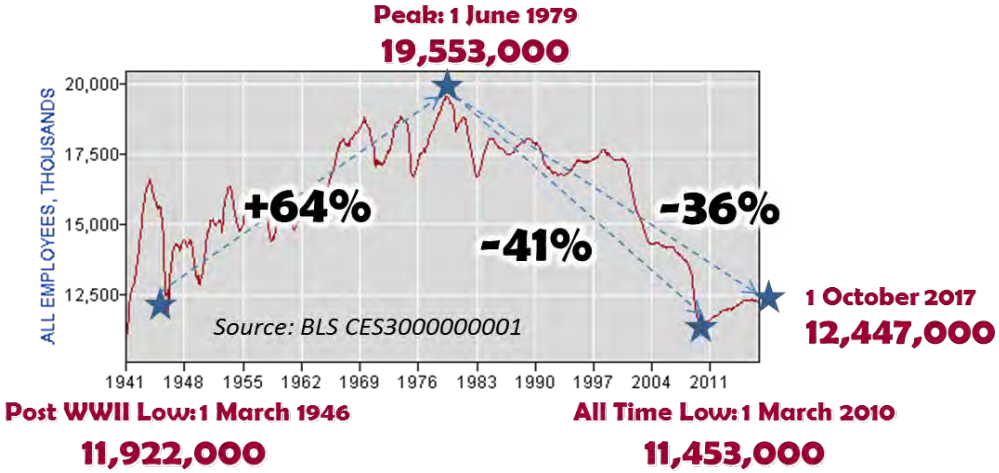
Source: BLS CES3000000001, Seasonally Adjusted

	1-Jan-10 Jobs (000s)	1-Oct-17 Jobs (000s)	New Jobs (000s)	% Growth
Manufacturing	**11,475**	**12,447**	**972**	**8%**
Durable Goods	**6,999**	**7,775**	**776**	**11%**
Wood Products	346	391	46	13%
Nonmetallic Mineral Products	376	415	39	10%
Primary Metals	347	382	35	10%
Fabricated Metal Products	1,259	1,450	192	15%
Machinery	977	1,099	122	12%
Computer and Electronic Products	1,095	1,044	-50	-5%
Computer and Peripheral Equipment	*159*	*166*	*8*	*5%*
Communications Equipment	*117*	*85*	*-31*	*-27%*
Semiconductors and Electronic Components	*363*	*362*	*-1*	*0%*
Electronic Instruments	*410*	*397*	*-12*	*-3%*
Miscellaneous Computer and Electronic Products	*47*	*34*	*-13*	*-28%*
Electrical Equipment and Appliances	354	393	38	11%
Transportation Equipment	1,314	1,618	304	23%
Motor Vehicles and Parts	*653*	*940*	286	44%
Furniture and Related Products	363	392	29	8%
Miscellaneous Durable Goods Manufacturing	570	590	21	4%
Nondurable Goods	**4,476**	**4,672**	**196**	**4%**
Food Manufacturing	1,453	1,607	154	11%
Textile Mills	121	111	-10	-9%
Textile Product Mills	120	110	-11	-9%
Apparel	160	117	-43	-27%
Paper and Paper Products	397	368	-29	-7%
Printing and Related Support Activities	497	435	-62	-12%
Petroleum and Coal Products	112	113	1	1%
Chemicals	794	817	23	3%
Plastics and Rubber Products	611	707	95	16%
Miscellaneous Nondurable Goods Manufacturing	210	289	78	37%

During the post-recession period (1 January 2010 to 1 October 2017), U.S. manufacturing produced 972,000 new jobs growing at a paltry rate of 8%, which is a little less than 1% per year (exactly 0.91%) or less than half the scleroic 2.2% average rate of GDP growth during the same time period. As shown, Motor Vehicles and Parts (286,000 new jobs, a 44% growth rate) and Miscellaneous Nondurable Goods Manufacturing[61] (78,000 new jobs, a 37% growth rate) were the star performers. On the opposite side of the coin, Computer and Electronic Products, Textiles, Apparel and Paper/Printing related products had serious declines.

[61] Miscellaneous Nondurable Goods Manufacturing products include goods as varied as clothing, sporting goods, toys, jewelry and medical products.

U.S. Manufacturing Employment since WWII



While the U.S. manufacturing industry added 972,000 jobs since the beginning of this decade, it has a long way to go to achieve its peak level of 19,553,000 in June 1979. Since peak, U.S. manufacturing has declined by 36%. Manufacturing currently employs 12,447,000 people, which is not statistically significant from manufacturing's recent low employment point of 11,453,000 jobs in March 2010.

While manufacturing is a critical element of the American economy, it should not be perceived as either a major employment or wage growth area. Furthermore, Jobenomics is concerned by the amount of political and public emphasis placed on manufacturing growth as the primary industry for job creation even if America reshores manufacturing jobs from foreign countries. This is not to imply that reshoring and keeping American factories in America is not a worthy goal, but even if it does, technology is tranforming manufacturing processes to be more efficient and cost effective by automating manual and cognitive work across the entire supply chain.

By reducing the human element, U.S. manufacturers could soon out-compete countries that specialize in low-cost, high-touch manufacturing. One of China's leading garment manufacturers, Tianyuan Garments Company, will soon (2018) start production in a modern $20 million Arkansas factory that can manufacture T-shirts for a paltry 33 cents ($0.33) each, which is well below the costs of similar manufactured Tianyuan products in China.[62]

The primary reason why this Tianyuan Garments-owned Arkansas factory can manufacture so cost effectively involves 330 American-made "sewbots" from Atlanta-based Software Automation Inc. Another reason is that Arkansas' lower-cost, high-skilled labor force (the low-skilled labor component is obsensibly being replaced by robots) is competitive against China's aging, shrinking, higher-paid workforce and lesser automated garment factories.

[62] Bloomberg Businessweek, China Snaps Up America's Cheap Robot Labor, A Chinese T-shirt company is setting up shop in Arkansas, lured by U.S. sewbots and lower production costs, 30 August 2017,. https://www.bloomberg.com/news/articles/2017-08-30/china-snaps-up-america-s-cheap-robot-labor

As reported by The Economist, from 2000 to 2010 88% of all U.S. manufacturing job losses were due to increased productivity and automation.[63] While productivity and automation have descimated the manufacturing labor force, they have paid handsomely in terms of manufacturing output. As reported by The Economist, American manufacturing has "more than doubled output in real terms since the Reagan era, to over $2 trillion today." In addition, "output per labour-hour rose by 47% between 2002 and 2015, outpacing gains in Britain, France and Germany." Notwithstanding, The Economist projects that "a widening skills gap means that over half of new (American) manufacturing jobs in the decade to 2025 may go unfilled."[64]

Increased automation and productivity are not the only factors depressing manufacturing labor force expansion. Other factors include competitive and predatory foreign labor rates that undercut U.S. workforce wages, dumping of imported below-cost products, tariffs on American made goods, a lack of high-tech manufacturing skills in the civilian labor force, outsoursing U.S. full-time work to American part-timers task-oriented workers and independent contractors, and burdensome government regulations and taxation on industries critical to U.S. sovereignty and prosperity. Given these factors, Jobenomics sees limited upside employment potential in U.S.manufacturing.

A 2014 U.S. Bureau of Labor Statistics report supports Jobenomics manufacturing assessment of limited upside employment potential. The BLS Employment Projections 2014-2024 Report, predicts manufacturing will lose 814,000 jobs (a decline of approximately 7%) during this 10-year period. [65] Fortunately, this has not yet transpired since the U.S. manufacturing workforce is stronger by 359,000 jobs today than it was at the beginning of 2014.

This gloomy BLS projection is contrary to President Trump's optimistic outlook. President Trump's promise to reduce corporate taxes will certainly make American manufacturing more competitive but advances in technology and automation is likely to offset potential manufacturing employment growth. When all is said and done, retaining American companies and reshoring manufacturing jobs is a noble and worthy effort, but will not create the employment renaissance of past eras.

According to BLS data, U.S. manufacturing employment growth during the 9-months since President Trump took office is less than 1% (exactly 0.84%) producing a gain of only 104,000 new jobs. To be fair, President Trump's manufacturing initiatives have not had enough time to materialize. Being the dogged dealmaker that he is, the President is spending countless hours promoting, cajoling and enlisting manufacturing executives to help America achieve a manufacturing renaissance that will provide millions of new high-paying jobs. Perhaps enactment of a major corporate tax reform package will encourage manufacturing companies to deploy tax savings and repatriated profits to recapitalize American manufacturing facilites, implement massive workforce skills-based training programs, and support mass-production/mass-expansion of U.S. Tier 2 and Tier 3 companies and independent contractors.

---

[63] The Economist, Companies/Industries, Training Day, 20-26 March 2017, Page 19

[64] The Economist, Manufacturing, Making it in America, American factories could prosper if they find enough skilled workers, 12 October 2017, https://www.economist.com/news/business/21730188-widening-skills-gap-means-over-half-new-manufacturing-jobs-decade-2025-may

[65] BLS Employment Projections 2014-2024 Report, https://www.bls.gov/news.release/ecopro.toc.htm

Manufacturing Job Growth Per Decade

Source: BLS Current Employment Statistics Survey (CES3000000001)

	1950s	1960s	1970s	1980s	1990s	2000s	2010-17 Q3
New Jobs	2,511,000	2,912,000	816,000	-1,420,000	-601,000	-5,805,000	972,000
Growth Rate	19%	19%	4%	-7%	-3%	-34%	8%

President Trump's bold vision of creating 25 million new jobs over the next decade is an admirable goal supported and endorsed by Jobenomics. While manufacturing will be an anchor tenant of the Administration's job creation plan, it will likely play a minor role in terms of the number of new jobs created. Over the previous 6-decades, manufacturing's high water mark in job creation was around 3 million new jobs in the 1960s. If one uses 3 million as a threshold, the Administration would need to increase the current manufacturing workforce from 12.4 million to 15.4 million, an increase of approximately 25%, which is triple the current 8% growth rate and higher than the 19% post-WWII manufacturing job growth rates that happened in the 1950s and 1960s manufacturing renaissance .

For the sake of argument, let's assume that the Administration will create 3 million new manufacturing jobs. 3 million is still well short of his 25 million goal. Even if one assumes that every new manufacturing job supports three new indirect jobs (shop keepers, food service workers, teachers, etc.), 12 million is still short of goal. Considering President Trump's disbanding of his Manufacturing Jobs Initiative and its CEO Advisory Council, the Administration has a very steep hill to climb if they hope to use manufacturing as their signiture jobs creation initiative.

In order to create 25 million new jobs in the next ten years, the Administration must place greater emphasis on tech-giants (Apple, Alphabet, Amazon, etc.) and small businesses. Tech-giants dominate the emerging digital economy that is rarely mentioned by the Administration. The digital economy is growing at 15% per year compared to sclerotic growth in the traditional economy. Small business are also not part of the President's lexicon. From a Jobenomics perspective small businesses should be center stage on the Administration's job creation efforts. If the 28 million U.S. small businesses were properly incentivized and supported to create only one new job each, the Administration would achieve its job creation goal in a fraction of the time currently envisioned.

As shown above on the Manufacturing Trends This Decade chart, the Durable Goods sector outpaced Nondurable Goods sector by 11% versus only 4% employment growth. Durable goods tend to have a long useful life (cars, large applicances, etc.) at least three years, according to the Economics and Statistics Administration. Nondurable Goods are usually items that are consumed in a short time or have useful lives of less than three years (food, apparel, paper, petrol, etc.).

Of the twenty Manufacturing subsectors, only Miscellaneous Nondurable Goods Manufacturing (37%), Transportation Equipment (33%), Plastics and Rubber Products (16%) and Fabricated Metal Products (15%) grew faster the overall Goods-Producing industries average of 13%. The biggest losers were: Apparel (-27%), Printing and Related Support Activities (-12%), Textile Mills (-9%), Textile Product Mills (-9%), Paper and Paper Products (-7%), and Computer and Electronic Products (-5%). Within the Computer and Electronic Products subsector U.S. Communications Equipment and Miscellaneous Computer and Electronic Products were down by a whopping 27% to 28%.

U.S. Manufacturing Employment Last 12 Months

7 Gain, 2 Zero and 3 Loss Months for a Net Gain of 117,000 Jobs

Over the last 12 months, the Manufacturing industry had 7 months of employment gains, 2 months with zero gains or lossses, and 3 months that posted job losses with a net increase of 117,000 jobs. 117,000 jobs equates only to 5.8% of the 2,004,000 new jobs produced over the last year.

As of the most recent BLS Job Openings and Labor Survey[66], U.S. manufacturers have 397,000 open jobs (6.4% out of a total of 6,200,000 unfilled U.S. jobs)—largely due to a lack of job skills. According to 2015 study by the Manufacturing Institute and Deloitte, over the next decade 3.4 million manufacturing jobs are projected to become available, but up to 60% (2 million) jobs will remain unfilled due to a lack of manufacturing skills. 84% of manufacturing executives agree that there is a "talent shortage" and the "skills gap is expected to grow substantially over the next decade." [67]

From a wage perspective, **manufacturing is no longer the high paying industry sector that it used to be**, nor will it be in the future. According to both the US Berkeley Labor Center and the National Employment Law Project, contrary to public perception that manufacturing jobs are "good jobs", manufacturing wages now rank in the bottom half of all jobs in the United States and are not even keeping up with inflation. In the largest segment of the American manufacturing base, automotive manufacturing, wages have declined further, falling three times faster than manufacturing as a whole and **nine times faster** than all occupations. [68] [69]

In summary, While manufacturing is vitally important to national sovereignty, political emphasis needs to be on high-growth industries in the service sector. As opposed to looking to manufacturers as a principle supplier of "good" jobs, manufacturing emphasis should be on (1) protecting the current set of U.S. manufacturers, (2) focusing on next-generation manufacturing technology and processes and (3) recapitalizatizing the American industrial base.

While Jobenomics enthusiastically supports reshoring manufacturing to the United States from overseas locations, this practice should be done for self-sufficiency and security reasons rather than

---

[66] BLS, Table 7. Job openings levels and rates by industry and region, not seasonally adjusted, http://www.bls.gov/news.release/jolts.t07.htm

[67] Manufacturing Institute, Infographic, http://www.themanufacturinginstitute.org/Research/Skills-Gap-in-Manufacturing/~/media/FF00360FC3344AD9B62F600B9FDEBD5B.ashx

[68] UC Berkeley Labor Center, Producing Poverty: The Public Cost of Low-Wage Production Jobs in Manufacturing, May 2016, http://laborcenter.berkeley.edu/pdf/2016/Producing-Poverty.pdf

[69] National Employment Law Project, Manufacturing Low Pay: Declining Wages in the Jobs That Built America's Middle Class, November 2014, http://www.nelp.org/content/uploads/2015/03/Manufacturing-Low-Pay-Declining-Wages-Jobs-Built-Middle-Class.pdf

from a jobs and wages perspective. Advances in digital technology have reduced the competitive advantage of cheap foreign labor.

Today's biggest barrier to reshoring and domestic recapitalization involves repatriating overseas profits from foreign low-tax or taxhavens to the United States high-tax environment of 35%. Jobenomics recommends a short no-tax or low-tax "holiday" to repatriate U.S. corporate profits to the United States as long as these profits are applied to industrial recapitaliation, workforce development and/or small business creation. U.S. companies are currently holding $2.10 trillion in profits overseas in 2014, according to a Bloomberg News review of the securities filings of 304 corporations.[70] Per an evaluation of 303 major U.S. corporations in 2015 by the Citizens for Tax Justice, total unrepatriated foreign profits amounted $2.4 trillion in order to avoid corporate tax consequences of $695 billion in U.S. taxes. Almost half of offshore U.S. profits are held by manufacturing companies and the other half by healthcare companies (mostly pharmaceutical companies) and information technology firms. [71]

[70] Bloomberg, U.S. Companies Are Stashing $2.1 Trillion Overseas to Avoid Taxes, 4 March 2015, http://www.bloomberg.com/news/articles/2015-03-04/u-s-companies-are-stashing-2-1-trillion-overseas-to-avoid-taxes

[71] Citizens for Tax Justice, Fortune 500 Companies Hold a Record $2.4 Trillion Offshore. 3 March 2016, http://ctj.org/pdf/pre0316.pdf

Government Employment

Total government employment currently is 22,337,000. Since 1 January 2010, government has lost 145,000 jobs, a negative 0.6% growth rate.

U.S. Government Employment This Decade

Employment *Source: BLS*	1 Jan 2010	1 Oct 2017	Change	%
Local	14,501,000	14,431,000	**(70,000)**	**48.3%**
State	5,150,000	5,100,000	**(50,000)**	**34.5%**
Federal	2,831,000	2,806,000	**(25,000)**	**17.2%**
Total	*22,482,000*	*22,337,000*	***(145,000)***	***100%***

Government continued to lose jobs with 48.3% of all job losses occurring within State government, 34.5% at the Local level, and 17.2% in the Federal government (not including military, which has also downsized). Jobenomics predicts that government job losses will continue to decline due to the effects of debt and deficit spending as well as conservative (less government) policies of the Trump Administration. In addition, if the U.S. economy suffers an economic disruption due to either domestic or foreign events, government spending will likely decrease further.

U.S. Government Employment Trends This Decade

Source: BLS CES9000000001, Seasonally Adjusted

	1-Jan-10		1-Oct-17		New Jobs (000s)	% Growth
	Jobs (000s)	% of Total	Jobs (000s)	% of Total		
Government	**22,482**	**100%**	**22,337**	**100%**	**-145**	**-1%**
Federal	**2,831**	**12.6%**	**2,806**	**12.6%**	**-25**	**-1%**
Federal, excluding U.S. Postal Service	2,170	76.7%	2,189	78.0%	19	1%
U.S. Postal Service	661	23.3%	616	22.0%	-45	-7%
U.S. Armed Forces	*Not Included*					
State	**5,150**	**22.9%**	**5,100**	**22.8%**	**-50**	**-1%**
State government, excluding education	2,791	54.2%	2,665	52.3%	-126	-5%
State government education	2,359	45.8%	2,434	47.7%	76	3%
Local	**14,501**	**64.5%**	**14,431**	**64.6%**	**-70**	**0%**
Local government, excluding education	6,430	44.3%	6,474	44.9%	45	1%
Local government education	8,072	55.7%	7,957	55.1%	-115	-1%

U.S. Government Employment Trends. This chart examines government trends for since the beginning of this decade. Out of total of the 146,659,000 nonfarm labor force, there are 22,337,000 government employees, or 15.2% of the U.S. civilian labor force.

Government downsizing has been relatively equal over the last $7^{3}/_{4}$ years with the Federal government employment staying constant at 12.6% (2,831,000 in January 2010 versus 2,806,000 in

April 2017) of all U.S. government employees. State government employment stayed statistically constant at 22.9% in 2010 versus 22.8% today. Local government employment also stayed statistically constant at 64.5% in 2010 to 64.6% today.

At the Federal level, 25,000 jobs were lost during this decade. The U.S. Postal Service was the biggest loser with a 7% downturn and the loss of 45,000 jobs. To some degree this downturn was expected with the rise of commercial carriers, like FedEx and UPS, and the country's transition from regular mail to e-mail.

At the State level, State government losses of 50,000 jobs (-1%) were offset by 76,000 new jobs (+3%) related to State government education (mainly university professors and staff). State government education increased from 45.8% of the State government workforce to 47.7% today. In other words, approximately half of all State government employees are within the State University system.

At the Local level, regular Local government employees downsized slightly by 70,000 jobs (0%) and Local government education employees (teachers and staff) lost 115,000 jobs (-1%). Local government education decreased slightly from 55.7% of the Local government workforce to 55.1% today. Much of government funded teacher job losses were offset by a rise in private sector Educational Services subsector that gained 562,000 jobs this decade.

U.S. Armed Forces Downsizing

Active	Mobilized	Guard	Selected Reserve	Civilian	TOTAL
Personnel End Strength - July 2010					
1,421,414	77,861	464,900	379,600	752,000	3,095,775
Personnel End Strength, End FY 2017					
1,296,900	-----	448,700	364,500	764,400	**2,874,500**
45%		16%	13%	27%	100%

Source: GlobalSecurity.org

Downsizing **-221,275** **-7%**

U.S. Armed Forces Personnel Trends. Federal government statistics include only noninstitutional personnel, which excludes "institutionalized" members of the armed forces.

According to GlobalSecurity.org data, a non-commercial think tank, U.S. Armed Forces (Army, Navy, Air Force and Marines) is one of the largest "noninstitutionalized" organizations with 2,874,500 personnel: 45% Active, 27% Department of Defense civilians, 16% National Guard, and 13% Selected Reserve.[72]

Over the last four decades, the active duty component of U.S. Armed Force downsized from a peak of 3.5 million to 1.3 million today. Since the beginning of this decade, the only component of the U.S. Armed Forces that grew was the Civilian component, up 12,400 personnel, from 752,000 to 764,400.

[72] GlobalSecurity.org, Military Personnel, http://www.globalsecurity.org/military/agency/end-strength.htm

Overall, since 2010, U.S. Armed Forces have downsized by 221,275 personnel (-7%) but are expected to grow with the Trump Administration's focus on increasing defense spending and rebuilding the military.

Small Business Statistics and Trends

Small business is the engine of the U.S. economy—an engine that employs the vast majority of Americans and produces the vast majority of new jobs not only this decade but in decades prior.

Business startups are the seed corn of the U.S. economy. Without the planting and fertilization of these seedlings, the fields of American commerce would remain fallow.

Unfortunately, both U.S. small business and startup businesses are faltering. American policy-makers and corporate-leaders do little to energize the small business community and promote American entrepreneurism that is at the heart of small business creation. Instead, government policies rely on big business for job creation. These policies are not likely to bear much fruit. In today's highly competitive global environment, most large corporations are reducing their labor force by outsourcing work to U.S. contingent workers and foreign entities, and automating routine manual and cognitive tasks via the revolution in network and digital technologies.

Fortunately, businesses are easier to start than any time in history. America must not squander this opportunity. This opportunity is made possible by the emerging digital and network economy that levels the playing field for startups and small businesses. According to James McQuivey, a leading analyst tracking the development of digital disruption, as compared to the traditional economy, a **digital startups are at least one 100-times easier to create and have 10-times the number of innovators that can innovate at one-tenth the cost** than traditional startups. [73]

Tax Reform is Trump's signature initiative that underpins his bold vision of sustained 4% GDP growth and 25 million new jobs over the next ten years. Jobenomics could not agree more with this vision.

The Republican-controlled U.S. House of Representatives will soon release their version of the "Tax Cuts and Jobs Act" that chops the corporate tax rate on small businesses that will empower the small business economic engine to accelerate GDP growth and job creation commensurate with President Trump's vision.

29.6 million U.S. small businesses employ the majority of all Americans and created the majority of all new U.S. jobs this decade. The "Tax Cuts and Jobs Act" chops the corporate tax rate from 35% to 20% on incorporated small business and reduces the tax rate form 39.6% to 25% for unincorporated "pass through" businesses (sole proprietorships, partnerships, and S-Corporations that pay taxes based the owner's personal income tax returns). Of course, there are many other considerations regarding the enactment of tax reform, but Jobenomics believes that these two small business tax cut provisions need to be maintained during the enactment process.

If each of these 29.6 million small businesses hired only one (1) net new employee over the next several years, Trump's 25 million new jobs goal could be realized in a much shorter timeframe than currently envisioned. From a Jobenomics standpoint, much can be done by the Administration to empower and invigorate small business creation to produce tens of millions of net new U.S. jobs.

---

[73] James McQuivey, Digital Disruption: Unleashing the Next Wave of Innovation, Figure 1-1: Digital Disruption Creates One Hundred Times the Innovation Power, Page 11.

Current State of U.S. Small Business. According to the U.S. Small Business Association (SBA), [74]

- There are 29.6 million U.S. small businesses with less than 500 employees compared to 18,600 big businesses with over 500 employees. Of the 29.6 million small businesses, 5.8 million had paid employees and 23.8 million had no employees, termed "nonemployers".
- The BLS definition of a nonemployer business is "one that has no paid employees, has annual business receipts of $1,000 or more ($1 or more in the construction industries), and is subject to federal income taxes". Nonemployer businesses include:
    - Individual proprietorships, sole proprietorships, an unincorporated business owned by individual and self-employed persons.
    - Partnerships or unincorporated business owned by two or more persons having a shared financial interest in the business.
    - Corporations that are legally incorporated businesses under state laws. [75]
- As explained by the Census Bureau "Nonemployer statistics data originate chiefly from administrative records of the Internal Revenue Service (IRS). Data are primarily comprised of sole proprietorship businesses filing IRS Form 1040, Schedule C, although a small percentage of the data is derived from filers of partnership and corporation tax returns that report no paid employees." Nonemployer businesses may operate from a home address or a separate business location.[76]
- Nonemployers are businesses with no employees other than the owner(s). Nonemployer firms include full-time, and part-time and home-based businesses. Nonemployer firms represent three-quarters of all U.S. businesses but only 3% of business receipts. According to the BLS, "while they represent a relatively small share of economic activity, nonemployer firms are important as a gateway to becoming employer firms, providing flexible work opportunities and a path to economic prosperity". In addition, nonemployers have a startup rate nearly three times the rate of employer firms.[77]
- 79.9% of small business establishments started in 2014 survived until 2015, the highest share since 2005. About half of all establishments survive five years or longer. About one-third of establishments survive 10 years or longer.[78]
- Small businesses created 63.2% of net new jobs from Q3 1992 to Q3 2013 (latest SBA data).[79]

---

[74] U.S. Small Business Association, Office of Advocacy, Frequently Asked Questions, https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2017-WEB.pdf

[75] BLS, Nonemployer Definitions, https://www.census.gov/epcd/nonemployer/view/define.html

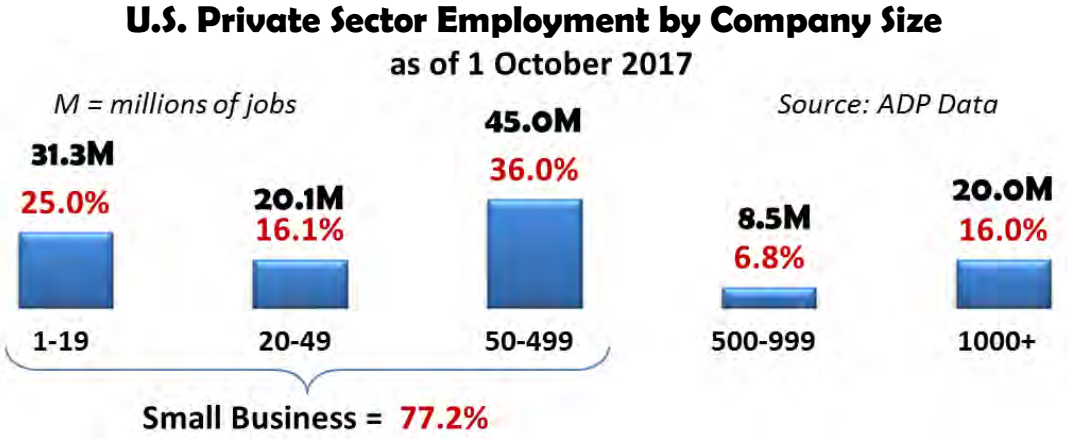
[76] U.S. Census Bureau, Purpose And Use Of Nonemployer Statistics, https://www.census.gov/epcd/nonemployer/1997/introgen.htm

[77] U.S. Small Business Association, Office of Advocacy, Nonemployer Start-up Puzzle, December 2009, https://www.sba.gov/sites/default/files/Nonemployer%20Start-up%20Puzzle.pdf

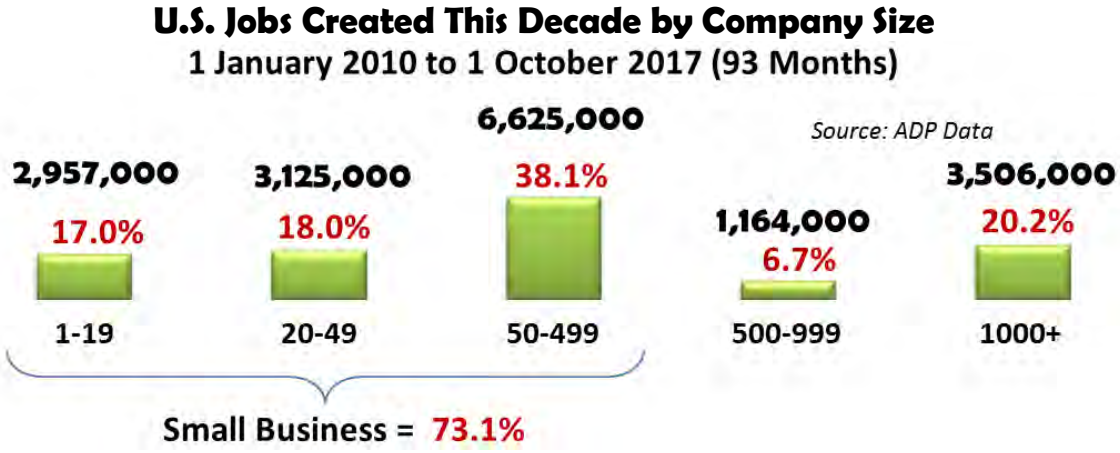
[78] U.S. Small Business Association, Office of Advocacy, Frequently Asked Questions, https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf

[79] U.S. Small Business Association, Office of Advocacy, Frequently Asked Questions, https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf

Compared to BLS and Census Bureau data, ADP (a monthly survey of 400,000 U.S. businesses by the ADP Research Institute in close collaboration with Moody's Analytics) has more recent and detailed data regarding U.S. small businesses employment and job creation by company size. Jobenomics asserts that the impact of small and nonemployer businesses, especially the self-employed, are greatly understated by the BLS and Census Bureau due to the nature of CPS and CES Survey samples and questionnaires. As reported by the ADP National Employment Report, small businesses are undeniably the dominant employer and job creator in the United States.

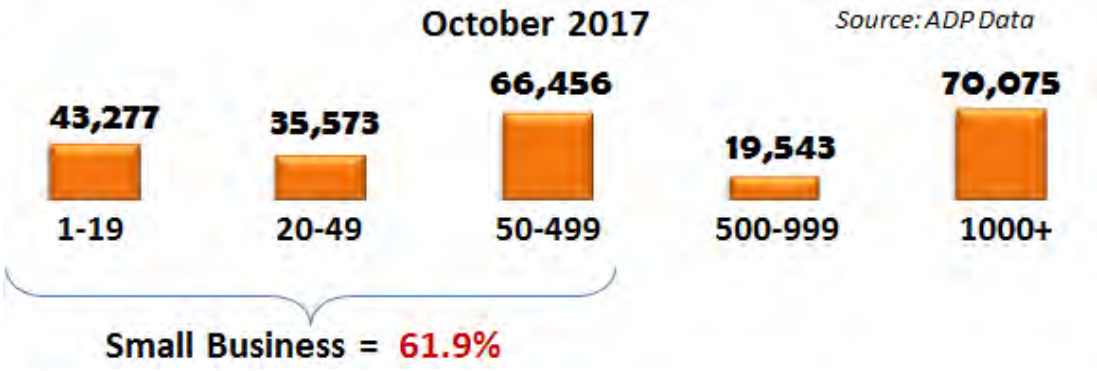


According to ADP, small businesses with less than 500 employees **employed** 77.2% of all private sector Americans with a total of 96,372,361 employees—3.4-times the amount of large businesses (with 500+ employees) that have 28,542,121 employees. Micro and self-employed businesses with 1-19 employees employ 1.6-times more than major corporations with over 1,000 employees, or 31,287,554 versus 20,015,946 respectively.



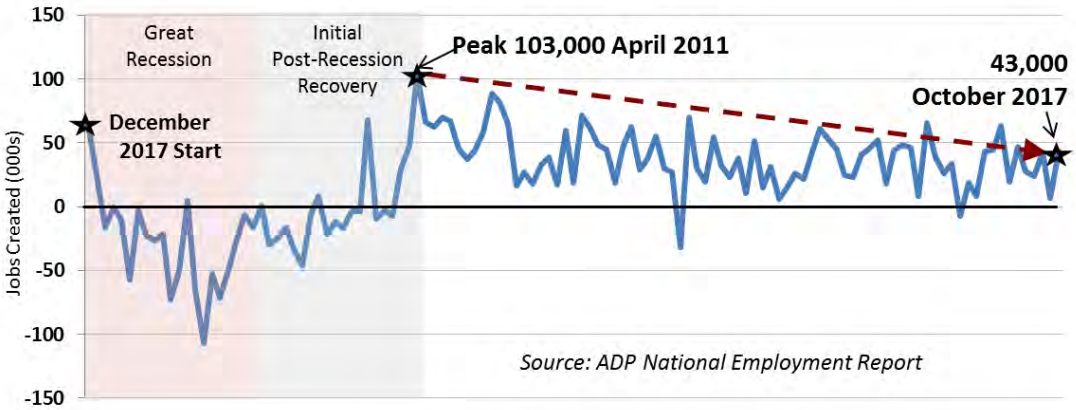
Since the beginning of this decade, small businesses **created** 73.1% of all new jobs in the United States. Small businesses with less than 500 employees created 2.8-times more jobs as large businesses with 500+ employees, or 12,706,977 versus 4,670,100 new jobs respectively. Microbusinesses with less than 20 employees created 84% as many jobs compared to very large institutions with over 1,000 employees, or 2,957,237 versus 3,506,217 new jobs respectively.

U.S. Private Sector Jobs Created Last Month by Company Size



In October 2017, U.S. small business (1-499 employees) created 61.9% of all new jobs compared to 41.9% in September, 51.7% in August, 74.6% in July, 68.4% in June, 77.2% in May, 72.2% in April and 81.9% in March. These percentages are significantly below the averages of previous years, which is indicative of the stress on the small business community. Stress on micro-businesses is especially acute.

U.S. Micro-Business Job Creation Engine Is Faltering



Alarmingly, micro-business job creation has dropped by almost 60% since the post-recession peak in April 2011. Micro-businesses underpin the U.S. economy. Continued denigration of these businesses can only lead to economic stagnation.

Industry Employment by Company Size
as of 1 October 2017

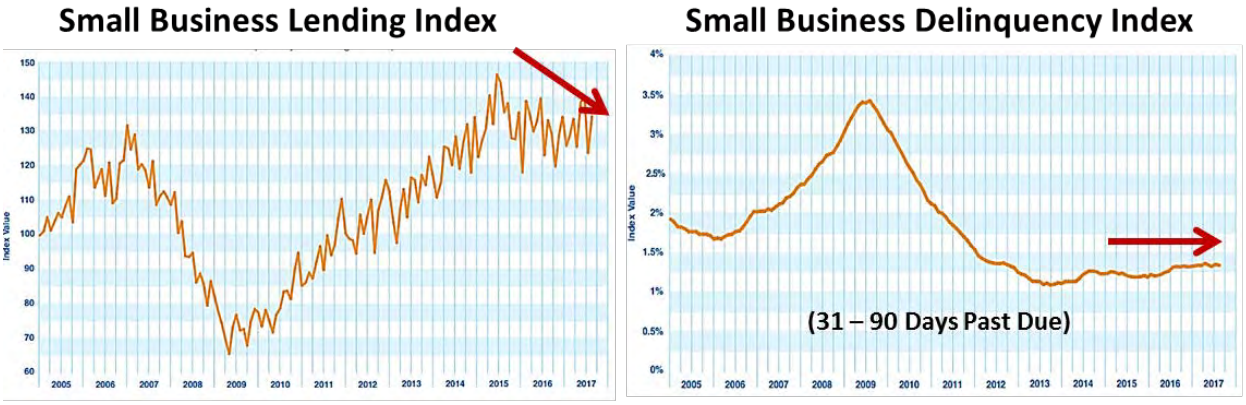
It is a common misconception that small businesses are only involved in service-providing industries whereas large major corporations dominate goods-producing industries. ADP data indicates that small business has a major role in goods-producing and service-providing industries.

Thomson Reuters/PayNet Indices provide valuable insight into the health of small businesses.

The Thomson Reuters/PayNet Small Business Lending Index[80] measures the volume of new commercial loans and leases to small businesses. To create the Small Business Lending Index, PayNet tracks the borrowing activity by millions of U.S. small businesses as reported by the largest lenders.

The Thomson Reuters/PayNet Small Business Delinquency Index[81] measures small business financial stress and provides early warning of future insolvency.

Thomson Reuter-PayNet Small Business Indices



January 2005 thru August 2017

Small business creditworthiness is critical to business expansion and job creation.

The Small Business Lending Index indicates that new loan originations to small businesses have increased slowly since the end of the recession but began decreasing in 2015—not a good early signal for GDP growth.

According to PayNet, "Because small businesses generally respond to changes in economic conditions more rapidly than larger businesses do, the Small Business Lending Index serves as a leading indicator of macroeconomic and industry trends." The Small Business Delinquency Index is a "reliable predictor of small business financial stress, a statistically valid indicator of unemployment changes, and an advanced signal of business cycle inflection points."

The good news is that small business loan delinquencies (31 to 90 days past due) recovered from Great Recession highs and are relatively stable at low loan delinquency rates.

It is also a common misconception that small businesses, especially micro and self-employed businesses, are the most fragile.

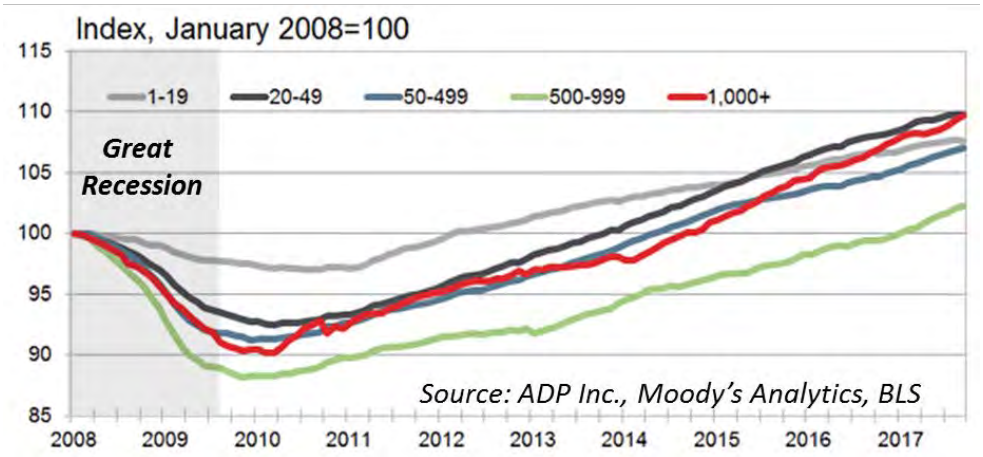
---

[80] Thomson Reuters/PayNet Small Business Lending Index, http://paynetonline.com/SmallBusinessInsights/ThomsonReutersPayNetSmallBusinessLendingInde.aspx

[81] Thomson Reuters/PayNet Small Business Delinquency Index, http://paynetonline.com/SmallBusinessInsights/ThomsonReutersPayNetSmallBusinessDelinquency.aspx

Post-Recession Employment by Company Size

Total Non Farm Employment (in thousands)



According to ADP's monthly situation report, as shown above, medium-sized and large corporations suffered greater downturns during the recession and slower recoveries than their small business counterparts. According to ADP data, as shown below, big businesses downsize rapidly during adverse financial times, whereas small businesses have to stay the course in order to say in business.

Consequently the ratio of new jobs created by small business relative to big business was significantly higher over the last 10-years as opposed to the last 7¾ years during the post-recession recovery. Over the last year, the small business advantage shrunk even further.

New Jobs Created by Company Size During and After Great Recession[82]

Source: ADP Historical Data	Pre Great Recession 1 Dec 2007 to 1 Oct 2017	Post Great Recession 1 Jul 2009 to 1 Oct 2017	Trump Adminstration 1 Jan 2017 to 1 Oct 2017
Large Business (500+)	**1,864,268**	**4,339,639**	**570,843**
Small Business (<500)	**7,113,324**	**12,155,959**	**1,336,592**
Ratio	**1 to 3.8**	**1 to 2.8**	**1 to 2.3**
Very Large Business (1000+)	**1,735,879**	**3,240,871**	**369,402**
Micro Business (1-19)	**2,301,046**	**2,870,773**	**272,774**
Ratio	**1 to 1.3**	**1 to 0.9**	**1 to 0.7**

As shown, small business creation is the best way to create millions of new jobs both during and after recessions.

- **Job Creation Since the Start of The Great Recession (1 December 2007 to 1 October 2017).** From the start of the Great Recession to today, small businesses created **79.2%** of all new American jobs.

[82] ADP, National Employment Report, 4 October 2017, http://www.adpemploymentreport.com/

  - Small businesses (less than 500 employees) created **3.8-times more jobs** as large businesses (over 500 employees), 7,113,324 versus 1,864,268 respectively.
  - Microbusinesses (less than 20 employees) created **1.3-times more jobs** than very large institutions (1,000+ employees), 2,301,046 versus 1,735,879 new jobs.

- **Post-Great Recession Job Creation Comparisons (1 July 2009 to 1 October 2017).** Over the post-recession and recovery period, small businesses created **73.7%** of all new American jobs.
  - Small businesses (less than 500 employees) **created 2.8-times more jobs** as large businesses (over 500 employees), 12,155,959 versus 4,339,639 respectively.
  - Microbusinesses (less than 20 employees) created **90% as many jobs** as very large institutions (1,000+ employees), 2,870,773 versus 3,240,871 respectively.

- **Trump Administration Job Creation (1 January 2017 to 1 October 2017).** Over the first 3-quarters/9-months of the Trump Administration, small businesses created **only 70.1%** of all new American jobs.
  - Small businesses (less than 499 employees) **created 2.3-times more jobs** as large businesses (500+employees), 1,336,592 versus 570,843 respectively.
  - Microbusinesses (less than 20 employees) created **70% as many jobs** as very large institutions (1,000+ employees), 272,774 versus 369,402 respectively. Jobenomics projects that this decline will continue in the future due to the decreasing number of new starts. The Trump Administration and Republican Congress promises to reduce corporate taxation for small business, which willbe helpful in reversing the downward trend, but tax reform alone will not fix the faltering micro-business challenge.

The Trump Administration has been primarily focused on big businesses (especially manufacturing) job recreation and reshoring. Jobenomics supports these important policies, but believes that the Administration needs to pay significantly more attention to startup, self-employed, micro and small business development—the primary employer of the majority of Americans, the creator of the majority of new jobs and the unquestionable engine of the U.S. economy.

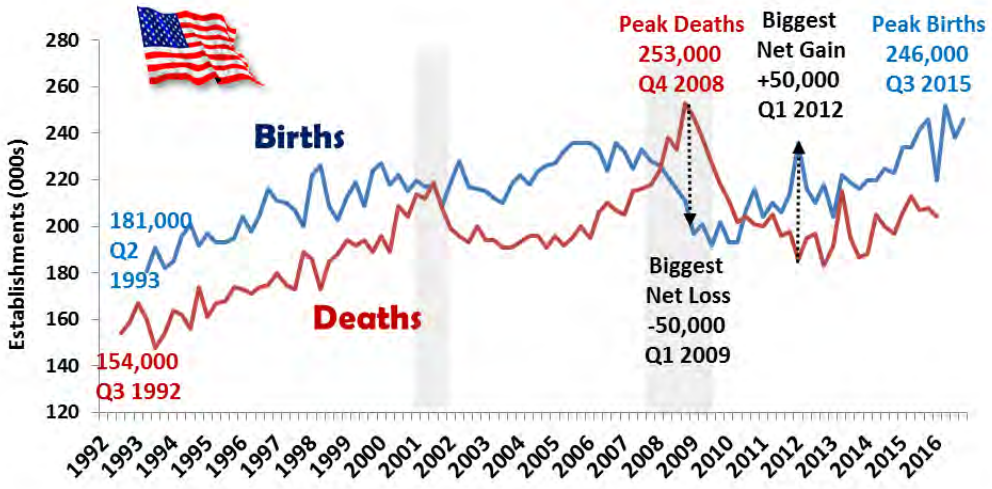
A better balance between big and small business job creation is needed by Washington policy-makers both in the Administration and on Capitol Hill. In order for President Trump to achieve his bold economic and job creation vision of sustained 4% GDP growth and 25 million new jobs over the next decade, he cannot rely on big business alone, nor can he accomplish this alone without support from both sides of the aisle in Congress. Without a viable small business creation and sustainment strategy, the U.S. economy is unlikely to prosper as it did in the 20th Century. Small business creation is unquestionably the best way to create tens of millions of new jobs.

Dynamics of Churn: Establishment Birth/Deaths and Job Gains/Losses. Business churn is determined by the number of company births compared the number of company deaths. Employment churn is determined by the number of job gains created by expanding or opening businesses compared to job losses generated by contracting or closing businesses. Managing and supporting healthy churn dynamics is fundamental to economic and labor force expansion.

The BLS started reporting on U.S. establishment birth/death history in 1992. The BLS defines establishments as a physical location of a certain economic activity—for example, a factory, mine, store, or office. A single establishment generally produces a single good or provides a single service. An enterprise (a private firm, government, or nonprofit organization) can consist of a single establishment or multiple establishments. All establishments in an enterprise may be classified in one industry (e.g., a chain), or they may be classified in different industries (e.g., a conglomerate).

Quarterly U.S. Business Birth/Death History: Q3 1992 to Q4 2016

Source: BLS Business Employment Dynamics Summary, Table 8[83]



Shown above are establishment births and deaths from Q3 1992 to Q4 2016 (latest BLS Data) by quarter.[84] The general slope of both time series is upward, largely attributed to population growth. The more people in a population generally equates to more firms in a growing economy. The population in 1992 was approximately 255 million as opposed to 326 million today, an increase of 28% more citizens.

The spread between enterprise births and deaths usually widens during growth periods and shrinks during recessions. During both the 2001 and Great Recession deaths exceed enterprise births.

- Deaths exceeded births by the largest amount in Q1 2009 during the height of the Great Recession with a net loss of 50,000 establishments.
- The largest increase of births over deaths occurred in Q1 2012 in the recovery period with a net increase of 50,000 establishments.
- The single biggest change from a previous quarter in the last 93-quarters (23¼ -years), in either births or deaths, was in Q1 2016 with the loss of 26,000 of the number of new establishment births, from 246,000 births in Q4 2015 (the peak year during the last three decades) to 220,000 new establishments in Q1 2016.

[83] Bureau of Labor Statistics, Economic News Release, Table 9, Private sector establishment births and deaths, seasonally adjusted, http://www.bls.gov/web/cewbd/table9_1.txt

[84] Q1 2016 is the latest data. Q3 2016 is scheduled for release in January 2017. Note: By BLS design, the time series has a 3-month difference between deaths and births.

Churn In Business Births/Deaths: Q1 2015 through Q4 2016

Source: BLS Business Employment Dynamics Summary, Table 8 [85]

Establish-ments	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Average
Births	234,000	234,000	242,000	246,000	220,000	252,000	238,000	246,000	239,000
Deaths	206,000	213,000	207,000	208,000	204,000	NA	NA	NA	207,600
	28,000	**21,000**	**35,000**	**38,000**					**31,400**

Over the last 8 BLS-reported quarters (Q1 2015 to Q4 2016), business births averaged 239,000 births versus business deaths of 207,600 per quarter, for a net growth of 31,400 establishments.

Churn In Net Job Creation: Q1 2015 through Q4 2016

Source: BLS Business Employment Dynamics Summary, Table 1 [86]

Jobs	Establish-ments	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Average
Gains	Expanding	5,727,000	6,244,000	5,972,000	6,375,000	5,778,000	6,056,000	6,207,000	6,016,000	6,046,875
	Opening	1,309,000	1,344,000	1,366,000	1,468,000	1,199,000	1,407,000	1,443,000	1,449,000	1,373,125
		7,036,000	**7,588,000**	**7,338,000**	**7,843,000**	**6,977,000**	**7,463,000**	**7,650,000**	**7,465,000**	**7,420,000**
Losses	Contracting	5,600,000	5,573,000	5,698,000	5,573,000	5,617,000	5,829,000	5,720,000	5,726,000	5,667,000
	Closing	1,199,000	1,200,000	1,213,000	1,269,000	1,166,000	1,327,000	1,242,000	1,363,000	1,247,375
		6,799,000	**6,773,000**	**6,911,000**	**6,842,000**	**6,783,000**	**7,156,000**	**6,962,000**	**7,089,000**	**6,914,375**
Net Job Change		**237,000**	**815,000**	**427,000**	**1,001,000**	**194,000**	**307,000**	**688,000**	**376,000**	**505,625**

Over the last 8 BLS-reported quarters (Q1 2015 to Q4 2016), expanding/opening businesses averaged 505,625 more jobs per quarter than contracting/closing businesses.

Churn of Small Business Creation and Destruction

Employment by **Expanding & Opening** Establishments	7,420,000
Establishment **Births**	239,000
Average Job **Gains** per Establishment	**31.0**
Employment by **Contracting & Closing** Establishments	6,914,375
Establishment Deaths	207,600
Average Job **Losses** per Establishment	**33.3**

Using the averages from the two previous charts, several general findings can be deduced. The first finding is the average size of an expanding and opening establishment is 31.0 new jobs per establishment, which qualifies them as small establishments or businesses. Second, contracting and closing establishments lose an average of 33.3 jobs, which means contracting and closing establishments have slightly greater impact on the nation's employment/unemployment ratio since the average loss is 2.3 workers greater than expanding and opening establishments.

---

[85] BLS, Business Employment Dynamics Summary, Table 8, Private sector establishment births and deaths, seasonally adjusted, retrieved 26 October 2017, http://www.bls.gov/news.release/cewbd.t08.htm

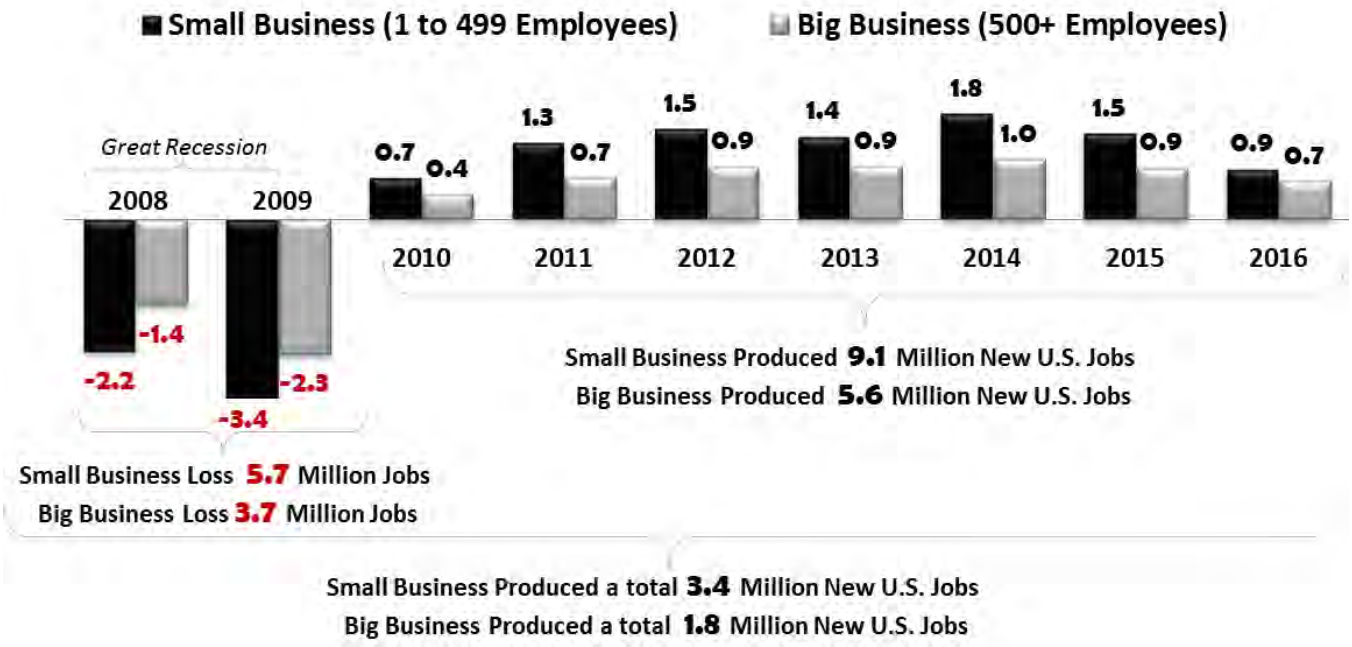
[86] BLS, Business Employment Dynamics Summary, Table 1, Private sector gross job gains and losses, seasonally adjusted, retrieved 26 October 2017, http://www.bls.gov/news.release/cewbd.t01.htm

These two findings underpin the need for better national approach to managing business creation and mitigating business losses. The current American laisse-faire approach to business health will be determined by free market forces that will determine winners and losers. Jobenomics asserts that this laisse-faire business approach is both wrongheaded and irresponsible in today's competitive world and sclerotic economy. The reason that the Chinese economy has grown so rapidly is that the Chinese public/private partnership is focused on business development. In the past, the Chinese focused on big business development of state controlled enterprises and private sector establishments that raised 700 million urbanites out of poverty via a renaissance in manufacturing, industrial and infrastructure development. Today, the Chinese are aggressively pursuing small business development with emphasis on e-commerce to raise 700 million rural poor out of poverty.

U.S. big business gets too much attention. U.S. small business receives too little. Big business can take care of itself. Small businesses need nurturing to grow and survive. This is especially true of startup businesses. The fact that half of the startups survive five years or more and one-third of start-ups survive ten years or more is a significant statistic given the lack of government and private sector support for American small business creation. Given proper support for startup companies and self-employed businesses, small business employment could be significantly improved by increasing the numbers of businesses started and reducing the rate of small business failures.

U.S. Business Churn since the Great Recession

Source: BLS Business Employment Dynamics Data



According to BLS Business Employment Dynamics (BES) data[87], during the Great Recession and the six-months thereafter, small business lost 54% more jobs than big business (5.7M versus 3.7M

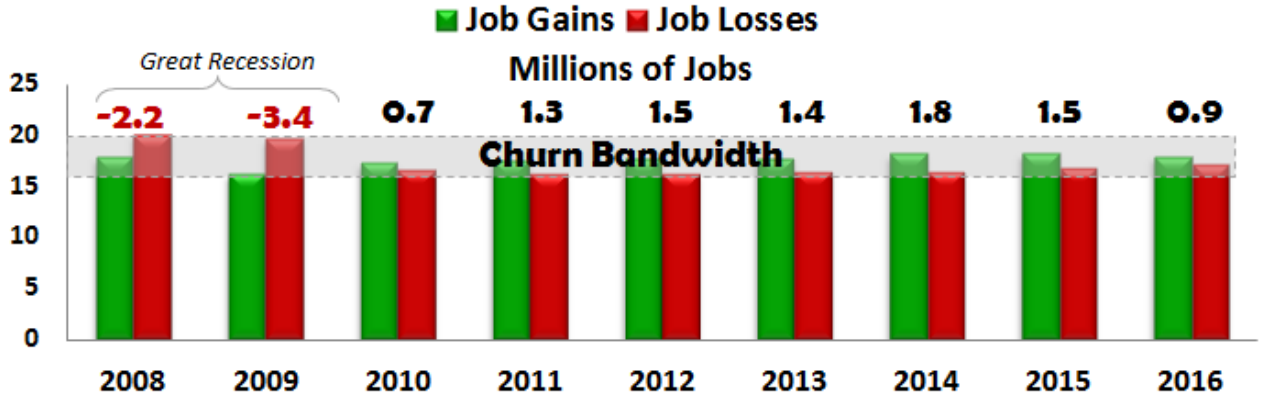
[87] U.S. Bureau of Labor Statistics, Business Employment Dynamics, Firm Size Gross Job Gains/Losses, retrieved 29 April 2017, http://data.bls.gov/cgi-bin/surveymost?bd

respectively for a total of 9.4M jobs lost in 2008 and 2009). During the post-recession recovery starting on 1 January 2010 to 31 December 2016 (latest data), small business gained 63% more jobs than big business (9.1M versus 5.6M respectively for a total of 14.7M jobs). During the entire post-recession period between 1 January 2008 and 31 December 2016, small businesses gained 3.4 million jobs whereas big businesses gained only 1.8 million jobs, a job creation ratio of **1.9-to-1** in favor of small business.

An analysis of business churn using ADP data supports the BES statistics sited in the above paragraph. According to ADP National Employment Report[88], during the Great Recession and the six-months thereafter, small business lost 64% more jobs than big business (5.7M versus 3.5M respectively for a total of 9.1M jobs lost in 2008 and 2009). During the post-recession recovery starting on 1 January 2010 to 1 October 2017 (9-months more data than the BES), small business gained 81% more jobs than big business (12.7M versus 7.0M respectively for a total of 19.7M jobs). During the entire post-recession period between 1 January 2008 and 1 October 2017, small businesses gained 7.0 million jobs whereas big businesses gained only 3.6 million jobs, a job creation ratio of **2.0-to-1** in favor of small business.

Small Business (1-499 Employees) Churn Dynamics

Source: BLS Business Employment Dynamics Data



This chart examines small business (less than 500 employees) churn during and after the Great Recession as calculated by the BES. The highlighted area shows that the churn bandwidth is relatively small, ranging from a difference between 0.7 and 3.4 million job losses or gains in any one year.

During the post-recession era, U.S. small businesses generated between 715,000 and 1,798,000 new jobs per year. If the American policy-makers and decision-makers focused on supporting and mass-producing highly-scalable small businesses, they could easily generate double or triple the number of small businesses each year. It is important to note that during the peak year, U.S. small business produced 1.8 million jobs in 2014, but slid to 1.5 million in 2015 and further deteriorated to 0.9 million in 2016. Given the current lackluster small business environment and the decaying number of

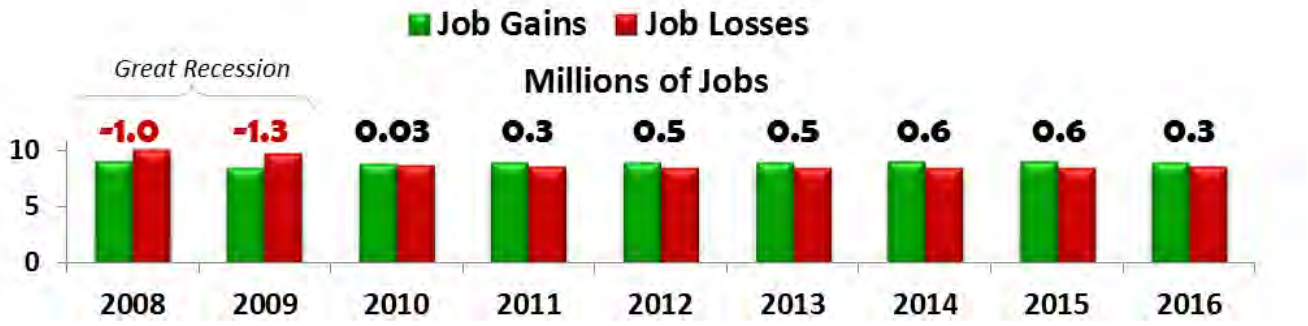
[88] ADP Research Institute, National Employment Report, April 2017, Historical Data, http://www.adpemploymentreport.com/2017/April/NER/NER-April-2017.aspx

startups, the downward trend is likely to continue unless meaningful attention and support is given to small business creation and sustainment.

As discussed in detail in Jobenomics' 20-part, 130-page blog series entitled "President Trump's New Economy Challenge", the new Administration can facilitate substantial change in improving the lending and regulatory environment for startup businesses and sustainment for existing small businesses. Providing lower taxes for so-called "pass-through businesses" (sole proprietorships, S Corporations and partnerships) that represent the vast majority of small businesses would be a significant leap forward in small business sustainment.[89]

Micro Business (1-19 Employees) Churn Dynamics

Source: BLS Business Employment Dynamics Data



Microbusinesses employ 1 (self-employed) to 19 people and produced about 20% of all new jobs this decade. During the Great Recession, microbusinesses lost 2.3 million jobs but gained 2.8 million in the post-recovery period, averaging between 300,000 to 600,000 new jobs over the last six years. This compares very favorably with very large corporations that have large amounts of cash reserves to deal with business churn. During the Great Recession, very large corporations (1000+ employees) lost 3.1 million jobs but gained 4.4 million in the post-recovery period, averaging between 600,000 to 800,000 new jobs over the last six years. It is not understated to say that it is **simply amazing that self-employed and mom-and-pop business can compete toe-to-toe in job creation with the likes of Walmart**, Yum Brands (KFC, Taco Bell, Pizza Hut), McDonald's, IBM and UPS—the top 5 largest U.S. employers.

The Importance of Startup Businesses. The health of the U.S. economy is firmly rooted in an environment that promotes startup businesses. Fewer startups mean fewer small businesses, and fewer businesses that potentially would grow to medium and large scale enterprises.

A startup business is defined as any entrepreneurial establishment that is birthed to fulfill a marketplace need. Startups come in various forms.

- **Scalable startups** are often spin-offs from major companies in order to take advantage of a niche or emerging opportunity. Scalable startups are born to be big. Achieving a "unicorn" status is the Holy Grail of scalable startups. A unicorn is a tech startup that has hit a $1 billion

[89] Jobenomics Blog, https://jobenomicsblog.com/

valuation in a short period of time, usually 5 to 10 years. The top 10 rated U.S. unicorns by Forbes include: Uber (transportation services), Airbnb (lodging services), Palantir (data analytics software), Snapchat (social media), SpaceX (aerospace), Pinterest (social media), Dropbox (cloud storage), WeWork (coworking), Theranos (healthcare) and Intarcia Therapeutics (biotechnology).[90]

- **Purchasable startups** are the specialty of the venture capital community that looks for specially and unique opportunities to underwrite, develop, patent and sell. In 2016, U.S. venture capitalists invested almost $60 billion in 4,500 startups (a 20% drop from 2015).[91] Business incubators and universities are great sources of innovative research and human capital for these kinds of startups.

- **Large company startups** are often associated with companies that specialize in franchises or licensed-companies. The food service industry serves as a good example. Over the last decade (Q3 2006 to Q3 2016, latest data), the BLS reports that the U.S. added 95,189 new establishments (restaurants, fast food businesses, pubs, food service companies, mobile food services, etc.) in this industry that is comprised of mostly small business enterprises.[92]

- **Social startups**, unlike scalable startups, are oriented to making a different kind of impact and are likely to be non-profits. There are 1.5 million registered nonprofit enterprises in the United States. A social enterprise is a company that's core mission is to benefit and improve society, communities or environment. Unlike a charity, a social enterprise is still a business looking to run and grow independently and make a profit. Examples include businesses that concentrate on education, employment, skills, healthcare and community development.

- **Personal small business startups** are overwhelmingly the largest form of new enterprises that are oriented to providing a living or supplemental income for individuals who seek an independent lifestyle. Today, there are 29.6 million American small businesses according to the SBA. This number is likely to expand greatly with next generation workers who tend to be more entrepreneurial than older generations and seek careers in the emerging digital economy. The rise of the contingent workforce (described in detail later in this report) could increase the number of startup businesses since good paying jobs in big business are increasingly difficult to find.

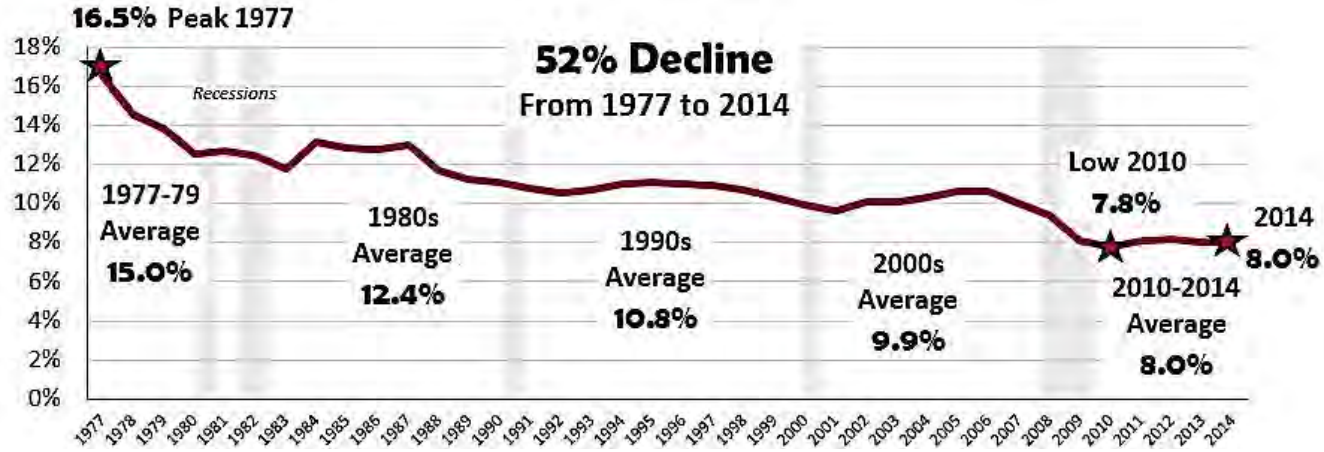
- **Self-employed startups** are for those enterprising individuals who seek independence and self-sufficiency. Self-employed startups can be either incorporated or unincorporated nonemployer businesses. According to the BLS, As of 1 October 2017, there are 15 million self-employed individuals in the United States. Jobenomics anticipates that these numbers should easily triple or quadruple in the emerging digital economy. Apps developers and Uber drivers serve as excellent examples. Today, 800,000 new mobile phone apps developers are

[90] Forbes, The Unicorn List, http://fortune.com/unicorns/
[91] PWC, http://www.pwc.com/us/en/press-releases/2017/moneytree-report-q4-2016.html
[92] BLS, NAICS 72 Accommodation and food services, Number of Establishments, 29 April 2017, http://data.bls.gov/timeseries/ENUUS00020572?data_tool=XGtable

joining the global apps community each year.[93] In 2015, Uber added 167,000 new U.S. ride-hailing drivers.

Startups (Less than 1-Year Old) As a Percentage of All U.S. Firms

Source: U.S. Census Bureau, Business Dynamics Statistics[94]



Unfortunately, American startups are facing difficult headwinds with excessively burdensome government regulations, an austere lending environment, minimal support from corporate tech giants, and predatory pricing from big retailers and service companies.

In terms of new starts (firms less than 1-year old), the BLS reports that the **United States is now creating startup businesses at historically low rates**, down from 16.5% of all firms to 8% in 2014 (latest available data on new starts).[95] Based on a Wall Street Journal (WSJ) analysis of this recently released BLS report's data, "If the U.S. were creating new firms at the same rate as in the 1980s that would be the equivalent of more than **200,000 companies and 1.8 million jobs a year**."[96] The WSJ also reports that share of employment at firms less than 1-year old has slipped from nearly 4% to about 2% of private-sector jobs from the 1980s to today.

According to a Kauffman Foundation analysis and study of the BLS/Census Bureau Business Dynamic Statistics data, U.S. startup activity hit its lowest point in 20-years in 2013.[97] Encouragingly, 2014, 2015 and 2016 showed growth in startup activity, which is a positive sign for the economy. However, the study also warns "Despite the recent positive trend, new businesses with employees—those creating jobs for people besides the entrepreneur—are still in a long-term decline compared to levels

[93] Vision Mobile, Developer Megatrends H1 2015, June 2015, https://www.visionmobile.com/reports/developer-megatrends-h1-2015

[94] U.S. Census Bureau, Business Dynamics Statistics, Firm Characteristics Data Tables, Firm Age, retrieved 5 November 2016, https://www.census.gov/ces/dataproducts/bds/data_firm.html

[95] BLS, Business Employment Dynamics Summary, 27 January 2016, Table 8, Private sector establishment births and deaths, seasonally adjusted, http://www.bls.gov/news.release/cewbd.t08.htm

[96] Wall Street Journal, Sputtering Startups Weigh on U.S. Economic Growth, 23 October 2016, http://www.wsj.com/articles/sputtering-startups-weigh-on-u-s-economic-growth-1477235874?mod=djem10point

[97] Kauffman Foundation, The Kauffman Index of Startup Activity: 2017, May 2017, http://www.kauffman.org/kauffman-index/reporting/startup-activity

in the 1980s." Kauffman also states that net job growth occurs in the U.S. economy only through startup firms, and counter to conventional wisdom, existing firms are net job destroyers. Furthermore, during recessionary years, job creation at startups remains stable, while net job losses at existing firms are highly sensitive to recessionary business cycles.

An earlier landmark Kauffman study, entitled "The Importance of Startups in Job Creation and Job Destruction", states that most city and state government policies that look to big business for job creation are doomed to failure because they are based on unrealistic employment growth models. "It's not just net job creation that startups dominate. While older firms lose more jobs than they create, those gross flows decline as firm's age. On average, **one-year-old firms create nearly 1,000,000 jobs, while ten-year-old firms generate 300,000**. The notion that firms bulk up as they age is, in the aggregate, not supported by data."[98]

From a Jobenomics perspective, the United States does a poor job planning, managing and supporting business and employment churn dynamics. For the most part, U.S. policy-makers and decision-leaders rely on the principle of free-market dynamics coupled with a laisse-faire approach to business and job creation. To a greater degree than big business, small business is struggling from the laisse-faire U.S. approach to business and job creation. By in large, small business is largely ignored by policy-makers.

After several dozen meetings on Capitol Hill, Jobenomics concludes that the Washington establishment's approach to small business and job creation is between lackluster and nonexistent. The reasons are many. Too few politicians have a business background. Those that do are usually from big business. Whereas entrepreneurs embrace risk, policy-makers are risk adverse. Perhaps the biggest reason is due to money. Small businesses generally do not have well-funded Political Action Committees or lobbyists. Perhaps the U.S. government's laisse-faire approach to American small business and job creation will change now that the new President is a businessman.

Startup Businesses. Business startups are the seed corn of the U.S. economy. Creating a new business startup requires different skills from running or growing a small business. Unfortunately, America's approach to nurturing these skills is ad hoc at best.

Demographics are one of the most important startup factors affecting entrepreneurship, job creation and innovation. According to the Kaufmann Foundation, a leading U.S. foundation focused on education and entrepreneurship, "business startups account for about 20% of US gross (total) job creation while high-growth businesses (which are disproportionately young and small) account for almost 50% of gross job creation."[99] [100] Quoting from U.S. Senator David Vetter in the foreword of the 2016 Kauffman Index of Startup Activity National Report,

[98] Kauffman Foundation, The Importance of Startups in Job Creation and Job Destruction, Last Paragraph, 9 Sep 2010, http://www.kauffman.org/what-we-do/research/firm-formation-and-growth-series/the-importance-of-startups-in-job-creation-and-job-destruction

[99] Kauffman Foundation, Entrepreneurship Policy Digest, The Economic Impact of High-Growth Startups, 10 October 2016, http://www.kauffman.org/what-we-do/resources/entrepreneurship-policy-digest/the-economic-impact-of-high-growth-

> "We (Americans) have seen a heartening increase in the level of startup activity in the United States, despite the numerous headwinds entrepreneurs face. While these recent trends are certainly good news, longer term trends are still troubling. The levels of startup activity in the nation are still below the prerecession peak, and entrepreneurship continues its long-term decline compared to previous decades….For a small business, capital is king. It affects every aspect of entrepreneurship from launch to long-term growth….lack of capital can also have disastrous effects on communities, as those that don't already have a vibrant entrepreneurial ecosystem experience difficulty in attracting new capital and spurring growth. Disadvantaged communities, in particular, can be trapped in an economic malaise, as the lack of available capital accentuates the already slow growth many of them experience, and makes it even harder for local entrepreneurs to address local needs and build the local support networks that are so vital to the entrepreneurs that follow." [101]

The Kauffman Startup Index is a comprehensive indicator of new business creation, covering a universe of approximately five million American companies. The Index provides valuable data on entrepreneurs and the startups they create. Rate of New Entrepreneurs measures the percentage of the adult, non-business-owner population that starts a business each month. It captures all new business owners, including those who own incorporated or unincorporated businesses and those who are employers or non-employers.

According to the 2017 Kauffman Index of Startup Activity report, while startup activity is up the last three years from a 20-year historical low in 2013, overall startup activity is still well below the levels before the Great Recession, and startups with employees are still on a long-term decline compared to historical levels. The recovery of startup activity in the United States in the last three years has been driven mostly by more people entering entrepreneurship and more of them entering out of choice (i.e., contingent workers) rather than necessity.

- In 2016, approximately 6.5 million U.S. adults switched from traditional employer-employee relationships to self-employed business ownership.
- In 2016, an average of 0.31% out of the adult population (310 out of 100,000 adults) created new businesses each month, which equates to 6,480,000 new businesses per year.
- In 2016, the proportion of new entrepreneurs driven primarily by "opportunity" rather than "necessity"—necessity entrepreneurs defined as new entrepreneurs who were previously

---

startups; and The Journal of Economic Perspectives, The Role of Entrepreneurship in US Job Creation and Economic Dynamism, Summer 2014, http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.28.3.3

[100] The Kauffman Index of Entrepreneurship series consists of the Kauffman Index of Startup Activity (measures business startup activity from 1997 to 2017 for the United States), the Kauffman Index of Main Street Entrepreneurship (measures established small business activity that focuses on businesses more than five years old with less than fifty employees from 1997 to 2015 for the United States) and the Kauffman Index of Growth Entrepreneurship (the latest in the series that focuses on entrepreneurial business growth from 1982-2017in the United States).

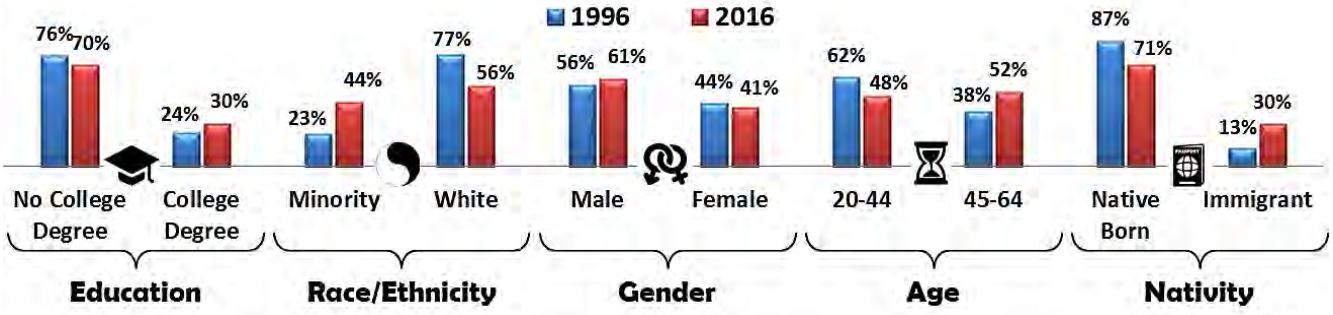
[101] Kauffman Foundation, The Kauffman Index of Startup Activity: 2016, Foreword by Senator David Vitter, August 2016, http://www.kauffman.org/~/media/kauffman_org/microsites/kauffman_index/startup_activity_2016/kauffman_index_startup_activity_national_trends_2016.pdf

unemployed and looking for a job—reached 86.3% and is now more than twelve percentage points higher than it was in 2009 at the height of the Great Recession.

- Older adults (aged 55 to 64) grew from 14.8% of new entrepreneurs in 1996 to 25.5% of all new entrepreneurs in 2016.[102]
- Immigrant entrepreneurs now account for almost 30.0% of all new entrepreneurs in the United States, up from 13.3% in 1996.

Rate and Composition of New U.S. Entrepreneurs

Source: Kauffman Startup Index 2017: National



The demographic synopsis of the Kauffman National Trends in Rate of New Entrepreneurs is shown above according to Education, Race, Gender, Age and Nativity.

- **Educational Level.** Substantially more business startups are led by entrepreneurs with less than a college degree, but those with a college degree have increased by 9 percentage points over the last decade. Jobenomics believes that the rate of college-level startup improvement is largely due to the younger generations (Generation Y/Z) outlook being much more entrepreneurial and anti-institutional (do not seek a traditional corporate lifestyle) than older generations (Generation X and Baby Boomers).

- **Race and Ethnicity.** Whites still dominate the small business startup landscape largely because there are many more Whites in the labor force than minorities. However, the percentage growth of Minorities increased by 21 percentage points over the last decade with a corresponding decline in White startups.
  - Hispanics increased from 10.01% to 24.12%, a gain of 14.11%
  - Asians increased from 3.42% to 7.59%, a gain of 4.17%
  - Other (mainly Multiracial, Native Americans and Islanders) increased from 1.02% to 3.46%, a gain of 2.44%
  - Blacks increased from 8.43% to 9.24%, a gain of 0.81%
  - Whites decreased from 77.12% to 55.59%, a **loss** of 21.53%

[102] Kauffman Foundation, The Kauffman Index of Startup Activity: 2017, May 2017, http://www.kauffman.org/kauffman-index/reporting/startup-activity

- **Gender.** Surprisingly, American women have underperformed over the last decade in business creation, dropping from 44% in 1996 of the adult population to 41% in 2016. The Rate of New Entrepreneurs in 2016 is 0.39% (390 out of 100,000) for men and 0.23% (230 out of 100,000) for women. Overall, men are substantially more likely to start businesses each month than are women, which holds true in all reported years.

  From a Jobenomics perspective, women are the greatest untapped asset in America. The Jobenomics Women-Owned Business initiative is paramount to energizing the U.S. labor force and economy. The decade of 2010's was supposed to be the Decade of Women-Owned Businesses for a number of reasons. (1) The Great Recession has encouraged many women to join the workforce, due to necessity or desire, of which many are college educated. (2) Male-dominated industries, like construction and manufacturing, aren't likely to return to pre-recession levels for many years to come. (3) Social norms are changing, allowing greater participation of women in business. (4) Many of the future service-related jobs, like elder-care, are likely to be dominated by women. (5) Women-owned businesses emphasize small businesses, rather than large, and are more likely to experience growth in the next decade. (6) The traditional "nuclear" families, with a male-head of household, have given way to households headed by women. (7) Most importantly, the rate of employment growth and revenue of women-owned businesses had outpaced the economy and male-dominated businesses for the last three decades.

  The reason for the gender gap in entrepreneurialism is both ethnological (cultural differences) and structural. Ethnological factors include development, work-life balances and historical biases and characteristics. Structural factors include such things as mentorship and startup financing. Perhaps the biggest factor is the lack of a national initiative to promote women-owned-businesses as a viable alternative to women-in-business.

  Regardless of the factors, women's contribution to GDP growth has been significant since they began entering the U.S. labor force in mass in WWII. According to the Center for American Progress, U.S. GDP would be roughly 11% lower ($1.7 trillion in 2012) today if women had not increased their working hours over the last three decades.[103]

  The best way to turn today's sclerotic economic recovery into a robust economic recovery is to engage America's largest and best educated demographic (women) in small business and job creation. Thankfully, women are entering the workforce at greater and greater rates. As shown below, over the last year 577,000 working age women entered the U.S. labor force compared to 441,000 men. Adjusted for population size, employment of women increased last year by 1.3% compared to only 0.8% for men.

[103] Center for American Progress, The Economic Importance of Women's Rising Hours of Work, 15 April 2014, https://www.americanprogress.org/issues/economy/reports/2014/04/15/87638/the-economic-importance-of-womens-rising-hours-of-work/

Last Year's Employment Growth by Sex[104]

Age 25 to 54 years	Working Age Employment		Total New Jobs	Growth Rate
	1 Oct 2016	1 Oct 2017		
Women	45,690,000	46,267,000	**577,000**	**1.3%**
Men	52,515,000	52,956,000	**441,000**	**0.8%**

Source: BLS CPS Household Data, Table A-8

- **Age.** Kauffman's data on age is counterintuitive, showing a 14% decrease in the rate of entrepreneurship in younger adults (aged 20 to 44) and a 14% increase in older adults (aged 45 to 65).

  - Ages 20 to 34 increased from 24.37% in 1996 to 34.27% in 2016, a **loss** of 9.90%
  - Ages 35 to 44 increased from 27.36% in 1996 to 24.04% in 2016, a **loss** of 3.32%
  - Ages 45 to 54 increased from 23.55% in 1996 to 26.13% in 2016, a gain of 2.58%
  - Ages 55 to 64 increased from 14.83% in 1996 to 25.46% in 2016, a gain of 10.63%

  The reason has nothing to do with questioning the widespread entrepreneurial aspirations of new workforce entrants, but understanding the impact of decades of decreasing birth rates and the challenges of an aging population.

  Another germane reason involves a tepid U.S. economy and eroding middle-class incomes, which are forcing older Americans to stay in the workforce much longer than originally planned. Since employers are reluctant to hire anyone over 50-years of age, many older Americas have turned to starting their own business as way to earn a living or supplement underfunded retirement income. In addition, the financial strength of older Americans, rather than financial weakness of younger Americans, makes a huge difference in startup activity.

- **Nativity.** The United States attracts the best and brightest people from other countries to study, work, become citizens and start businesses. In 2016, immigrant startup business entrepreneurs represent 30%, up from 13% in 1996. From a Jobenomics standpoint, this is a powerful statistic considering the far-reaching contribution of foreign-born immigrants and their children to American economic growth and prosperity.

  According to a 2011 report by the Partnership for a New American Economy, immigrants or their children founded more than 40% of U.S. Fortune 500 companies—a compelling reason why high-skilled immigrants are so critical to U.S. economic growth. About 20% of the newest Fortune 500 companies founded between 1985 and 2010 have an immigrant founder. Many of America's greatest brands, Apple, Google, AT&T, Budweiser, Colgate, eBay, General Electric, IBM, and McDonald's, owe their origin to a founder who was an immigrant or the child of an immigrant. The Fortune 500 companies that boast immigrant or children-of-immigrant founders have

[104] BLS, CPS Household Data, Table A-8, Employed persons by age, sex, marital status, multiple jobholding status, and self-employment, seasonally adjusted, 26 Oct 2017, https://www.bls.gov/web/empsit/cpseea08.htm

combined revenues of $4.2 trillion. $1.7 trillion of that amount comes just from the companies founded by immigrants.[105]

In the United States, legal immigration is largely a family-based system. From an economic and labor force perspective, the United States needs to find ways to attract and retain foreign-born immigrants via a legal skills-based immigration system, also called a talent-based, merit-based or points-based systems used by many countries.

Skills-based immigration systems assess skilled individuals based upon criteria such as age; past experience; language ability, educational and technical skills; entrepreneurism and ability (technical and financial) to start a business; and "adaptability" to assimilate into the host country.

Countries like Australia's General Skilled Migration, the United Kingdom's Highly Skilled Migrant Programme, Canada's Express Entry system, and New Zealand's Skilled Migrant system are legal skills-based systems. Each of these countries uses "point calculators" to determine eligibility. For the most part, these calculators are merits-based, but some add points for having a close family relative living and productively working in the country. Many of these countries use their skills-based to "fast-track" highly-skilled immigrants to permanent resident status, whether it is a permanent work visa (aka Green Card in the United States) or citizenship.

Australia uses its General Skilled Migration (aka Skillselect) program to attract migrants to alleviate general labor shortages and attract tradespeople and skilled professionals. Skillselect's point calculator evaluate potential visa applicants (work visas, student visas, etc.) via a series of questions that start with age, English competency (a score at least a "6" on all four components of the International English Language Testing System examination), post-secondary education or trade qualification (suitable to an assessment of a relevant Australian assessing authority), and necessary work experience in an applicants nominated occupation (as listed on the Australian Skilled Occupation List).[106]

According to a recent tweet from President Trump, "The merit-based system is the way to go. Canada, Australia!"[107] According to the Government of Canada, "We choose skilled immigrants as **permanent residents** based on their ability to settle in Canada and take part in our economy. There is a new system to manage how people with skilled work experience apply to immigrate to Canada. It is called Express Entry." [108] Express Entry is used to manage applications for permanent residence under these federal economic immigration programs:

---

[105] Partnership fora New American Economy, The "New American" Fortune 500, June 2011, http://www.renewoureconomy.org/sites/all/themes/pnae/img/new-american-fortune-500-june-2011.pdf

[106] Australia Skilled Immigration Points Calculator, http://www.workpermit.com/immigration/australia/australia-skilled-immigration-points-calculator

[107] USA Today, Trump renews praise for Canada's 'merit' immigration system, 3 March 2017, http://www.usatoday.com/story/news/world/2017/03/03/donald-trump-praises-canada-immigration-system-again/98685784/

[108] Government of Canada, Immigrate as a skilled worker through Express Entry, http://www.cic.gc.ca/english/immigrate/skilled/index.asp

- the Federal Skilled Worker Program (allows skilled professionals with significant work experience, employability, and adaptability to gain legal permanent residence in Canada),
- the Federal Skilled Trades Program (allows skilled workers with experience in a selected number of trades to gain legal permanent residence in Canada), and
- the Canadian Experience Class (a popular route to permanent residence for migrants with previous Canadian work experience, such as international students).

Most of the 6.2 million open job positions in the United States are likely to remain unfilled due to a lack of domestic skills. While Jobenomics advocates implementation of a national lifelong applied learning and skills-based training/certification program to upgrade the skills of domestic workers, the United States also needs to recruit and retain global talent since the American education system is not producing the kind of workforce skill sets necessary for a competitive society.

On 2 August 2017, President Trump on Wednesday endorsed a new bill in the Senate sponsored by Republican Sens. Tom Cotton (Ark.) and David Perdue (Ga.) that will create a "merit-based" immigration system that would put a greater emphasis on job skills than family relationships. Unfortunately, the bill also proposes to reduce the annual distribution of green cards awarding permanent legal residence from 1 million to only 500,000. While Jobenomics agrees with a skills-based merit-based system, Jobenomics disagrees with cutting the pathway to legal residence by half. If America wants the world to know that we are a nation of immigrants who welcome fellow legal immigrants, our policy should double the number of green cards as opposed to cutting by 50%. In its current form, this bill is not likely to make it into law.

The United States spends much more money and time per student than most countries. Unfortunately, these expenditures do not translate into better performance or competitiveness. According to the Organization for Economic Cooperation and Development[109], "students in the United States have particular weaknesses in performing mathematics tasks with higher cognitive demands, such as taking real-world situations, translating them into mathematical terms, and interpreting mathematical aspects in real-world problems." Among the 34 advanced economies in the OECD, the United States ranked 17th in reading, 20th in science and 27th in math.

The Deferred Action for Childhood Arrivals (DACA) program was established by an Executive Order from President Obama in June 2012 to protect children of illegal immigrants from being deported. The program was deemed "unconstitutional" by Attorney General Jeff Sessions, and formally rescinded by the Trump administration in September 2017 with the caveat that implementation be delayed by six months to give Congress enough time to deal with the disposition of nearly 800,000 DACA recipients (called Dreamers) who currently receive temporary deportation protection and work permits. According to many accounts, including the left-leaning New York Times, report that an "exasperated" President Trump is earnestly looking for a way to allow Dreamers to remain in the United States legally. From a Jobenomics standpoint, instituting

[109] OECD, https://www.oecd.org/unitedstates/PISA-2012-results-US.pdf

a Merits-Based (also commonly referred as talent-based, skills-based or points-based) DACA program may be a way out of the current humanitarian/constitutional conundrum and worthy of consideration by Congress.

DACA allowed immigrants who entered the country illegally as children to receive a renewable 2-year period of deferred action from deportation and eligibility for a work permit. In order to qualify, Dreamers came out of the shadows, paid a fee, passed background checks, received Social Security cards and work permits under the promise of government protection. The majority of Dreamers are currently in school or working. Some are on active duty in the U.S. armed forces. Others have even started their own business.

For the most part, Dreamers are productively engaged in pursuing the American dream. According to an August 2017 survey by the Center of American Progress, most of the Dreamers are presently in their 20s and about 80% arrived when they were 10 or younger. For the most part, these Dreamers are more inculcated with American culture than their "home" countries. Consequently, these Dreamers should have established a track record that would make a Merits-Based DACA program feasible. Merits-Based Immigration has been endorsed by the President and is attractive to many Republican and Democrat legislators.

A Merits-Based DACA program would "vet" Dreamers into three general categories: Keeper, High Potential, and Deportable. Keepers would consist of highly talented and skilled candidates that would be granted Green Cards (a permit allowing a foreign national to live and work permanently in the U.S.). The High Potential cadre would be granted extensions of the temporary work permits that they already have been granted under DACA. The Deportable category would consist of criminals, gang members and those that have chosen perpetual public assistance over workfare.

Instituting a Merits-Based DACA vetting program could be relatively straightforward. For example, those serving in the U.S. armed forces could be granted a Green Card upon an honorable discharge. Business owners, college grads with high GPAs or critical STEM skills, and high-performance employees of reputable corporations could also qualify as Keepers. On the other end of the spectrum, online background checks of police and welfare records could provide justification for deportation. All others would likely fall in the High Potential category. People in this category could be given a finite amount of time to prove their potential via employment or special programs involving public or civil service to their communities.

Instituting a Merits-Based DACA program may also be worthy of consideration by Congress as a potential template for the parents of these children (aka DAPA, a proposed expansion of DACA), other productive undocumented immigrants, as well as a framework for comprehensive immigration reform.

A merits-based immigration system and comprehensive immigration is imperative for two major reasons: (1) the U.S. economy will be highly dependent on integrating and enabling the Hispanic community that will be the largest minority demographic as the United States transitions from a majority-minority to a minority-majority nation status within the next 25-years, and (2) to

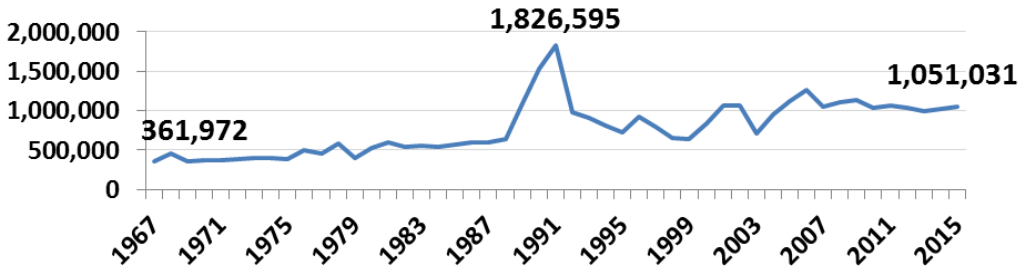
compete on the world's stage, the United States must attract and retain the best and brightest people from other countries to study, work, become citizens and start businesses via a merit-based immigration system.

Despite all the political rhetoric about U.S. immigration, comprehensive immigration reform, illegal aliens/undocumented workers and legal immigration, the American populace is mostly uniformed or undereducated about the importance of attracting the best and brightest people from other countries to study, work, become citizens and start businesses in the United States.

Most Americans would be surprised to find that there are 26,258,000 foreign-born persons in the U.S. labor force, comprising 16.7% of the total 157,130,000 American workforce (49% Hispanics, 24% Asian, 18% White and 9% Black) as of 2015. The foreign-born include legally-admitted immigrants, refugees, temporary residents such as students and temporary workers **and** undocumented immigrants.[110] The U.S. Department of Homeland Security (DHS) estimates the unauthorized immigrant population is 11.4 million up from 8.5 million in 2000 and 2-4 million in 1980.[111] Consequently, there are approximately 15 million legal foreign-born U.S. residents that are increasing at a rate of 1-million people per year.

Persons Obtaining Lawful U.S. Permanent Resident Status

Source: U.S. Department of Homeland Security, 2015 Yearbook of Immigration Statistics



There were 1,051,031 new lawful permanent U.S. residents in 2015 (latest data from the Department of Homeland Security). After immigrating to the United States, legal permanent residency (green card holder) is the first necessary step to becoming a U.S. citizen—the highest status of citizenship attainable. Being a valid green card holder allows a person to permanently reside in the United States, have lawful rights to work, and petition for family members to receive green card status. After 5+ years of good legal standing, a green card holder can apply for U.S. citizenship (naturalization). Other ways of becoming a citizen is by being born in the United States (aka "anchor babies"), being born overseas to a United States Citizen parent, living in the United States as a child when a parent undergoes naturalization, and joining the United States armed forces.

[110] BLS, Labor Force Characteristics of Foreign-born Workers Summary, 19 May 2016 (latest report retrieved July 2017) https://www.bls.gov/news.release/forbrn.nr0.htm

[111] DHS, Estimates of the Unauthorized Immigrant Population Residing in the United States: January 2012 (latest report retrieved July 2017), https://www.dhs.gov/sites/default/files/publications/Unauthorized%20Immigrant%20Population%20Estimates%20in%20the%20US%20January%202012_0.pdf

In order to become a permanent U.S. resident, one must first come to the United States. According to the U.S. State Department, a citizen of a foreign country who seeks to enter the United States generally must first obtain a U.S. visa, which is placed in the traveler's passport, a travel document issued by the traveler's country of citizenship.[112] While there are about 185 different types of visas, there are two main categories of U.S. visas: Immigrant Visas (IM) and Nonimmigrant Visas (NIV).

- An Immigrant Visa is issued to a person wishing to live permanently in the United States.
- A Nonimmigrant Visa is issued to a person with permanent residence outside the United States, but wishes to be in the United States on a temporary basis such as tourism, medical treatment, business, temporary work and/or study.

Categories of Immigrant Visas (IM) Leading To Permanent Residency

Classes of U.S. Immigrant Visas (IV) Issued In 2016 *Source: U.S. Department of State, Bureau of Consular Affairs*		
Family-Based		
Immediate Relatives	315,352	51%
Family Sponsored Preference	215,498	35%
Vietnam Amerasian Immigrants	6	0%
Subtotal	**530,856**	**86%**
Employment-Based		
Employment-Based Preference	**25,056**	**4%**
Special		
Diversity Immigrants	45,664	7%
Special Immigrants (e.g., certain Iraqis or Afghans)	16,176	3%
Armed Forces Special Immigrants	0	0%
Subtotal	**61,840**	**10%**
Total Immigrant Visas (IM) Issued	**617,752**	100%

According to the State Department,[113]there are two primary Family-Based Immigrant Visas: With a few exceptions, a foreign citizen must be sponsored by a U.S. citizen relative, U.S. lawful permanent resident, or a prospective employer to obtain an immigrant visa. The sponsor begins the immigration process by filing a petition on the foreign citizen's behalf with U.S. Citizenship and Immigration Services (USCIS). 86% of all Immigrant Visa issued in 2016 were family-based, 10% were for special reasons such as conflict-related services and a diversity "lottery" to attract immigrants with low rates of immigration to the United States, and, lastly, 4% were employment-

[112] U.S. Department of State, Bureau of Consular Affairs, U.S. Visas, https://travel.state.gov/content/visas/en/general/frequently-asked-questions/what-is-a-u-s-visa.html
[113] U.S. Department of State, Bureau of Consular Affairs, Family-Based Immigrant Visas, https://travel.state.gov/content/visas/en/immigrate/family/family-preference.html#1

based. As discussed earlier, other countries like Canada, United Kingdom and Australia, prioritize employment-based immigration as the primary and fastest route to legal permanent residency.

Immediate Relative Immigrant Visas and Family Preference Immigrant Visas. There is no limit on Immediate Relative immigrant visas nor are there any restrictions for same-sex spouses. For the family preference category there a four preferences each with a fiscal year limitation: (F1) unmarried children of U.S. citizens and their children, 23,400, (F2) spouses, minor children, and unmarried sons and daughters of a Lawful Permanent Resident, 114,200, (F3) married sons and daughters of U.S. citizens, and their spouses and minor children, 23,400, and (F4) brothers and sisters of U.S. citizens, and their spouses and minor children, 65,000.

Employment-Based IM Visas

Employment-Based Immigrant Visa Program *Source: U.S. Department of State, Bureau of Consular Affairs*	
E1	**Priority Workers**
•	Persons with extraordinary ability
•	Outstanding professors and researchers
•	Multinational managers or executives
E2	**Professionals** Holding Advanced Degrees and Persons of Exceptional Ability
E3	**Skilled Workers, Professionals and Unskilled Workers** that are not temporary or seasonal workers
E4	**Certain Special Immigrants** such as international broadcasters and former U.S. government employees
E5	**Immigrant Investors** for capital investment in new commercial enterprises in the United States which provide job creation.

According to the State Department, [114] there are five Employment-Based Immigrant Visas: E1 through E5. Approximately 140,000 employment-based immigrant visas are made available each year to qualified applicants in five preference categories shown above.

For some unexplained reason, only 25,000 Employment-Based Immigrant Visas were issued in 2016. From a Jobenomics perspective, 25,000 Employment-Based Immigrant Visas out of a total of 617,228 total Immigrant Visas (4%) is borderline criminal behavior from an economic and labor force perspective. At best, this activity is tantamount to an intellectual capital embargo in an era where the United States is failing to fill 6+ million high-skilled domestic job openings and competing for its fair share of billions of global jobs in the Network Technology Revolution.

[114] U.S. Department of State, Bureau of Consular Affairs, Employment-Based Immigrant Visa, https://travel.state.gov/content/visas/en/immigrate/employment.html#overview

There is a sixth employment-based visa category that is called a "Startup Visa". Introduced as the Startup Visa Act of 2011, this category languished in Congress for years and was eventually put in motion during the last days of the Obama Administration, with a scheduled start date in mid-2017. Surprisingly the Trump Administration is reportedly not in favor of this visa that promotes foreign entrepreneurs starting their businesses in the United States.

As legislated, to qualify for a U.S. Startup Visa, a foreign owner must satisfy two major conditions: first, have or receive (qualified U.S. investors with established records of successful investments) adequate funds, and second, provide compelling evidence of the startup entity's substantial potential for rapid growth and American job creation. It is wrongheaded for a pro-business Administration to object to such entrepreneurial legislation. It should be aggressively supported. Eliminating this visa will further show the world, in this case the small business world, that the America seems hell-bent on discouraging foreign visitors, foreign immigration, foreign investment and foreign entrepreneurs in United States.

Not surprisingly, Canada picked up on the startup visa from the Startup Visa Act of 2011. In March 2013, Canada started accepting foreign startup applications. Reportedly, Canada's Start-up Visa website can issue a visa within 15 days of application.[115] While initial applications were slow, the program is rapidly gaining momentum with the aid of not-for-profit startup accelerators, like the Vancouver-based Launch Academy. The Launch Academy team is especially looking for next-generation advanced technology startups in the following areas artificial intelligence, virtual/augmented/mixed reality, blockchain, fintech, data science, quantum computing, health-tech and cybersecurity [116]

It is worthy to re-emphasize the fact that the Network Technology Revolution is facilitating an explosion in the emerging digital economy. Among the 34 advanced economies, the United States ranks 17th in reading, 20th in science and 27th in math—the disciplines required to populate the U.S. labor force with domestic workers with cognitive skills needed to solve real-world problems and provide enough digital-savvy humans to compete in the emerging digital economy. From a Jobenomics perspective, a startup visa would be a rather inexpensive and innovative way to start to mitigate these weak science and math statistics. Foreign-born entrepreneurs are paramount to American economic growth and prosperity. If there is any doubt about this, just look at the contribution that South Africa-born, Canadian-reared, now American citizen Elon Musk has done for America.

Over 10 million people visited the United States for business or pleasure in 2016. Over 8 million or 78% (highlighted in green above) are temporary visitors for business or/and pleasure. Due to our enhanced security and perceived anti-immigration policies, the number of "B Visa" visitors

[115] Government of Canada, Start-up Visa Help Centre, http://www.cic.gc.ca/english/helpcentre/answer.asp?qnum=645&top=6

[116] Tech Crunch, Launch Academy's startup visa program gives entrepreneurs permanent residency in Canada, 2 June 2017, https://techcrunch.com/2017/06/02/launch-academys-startup-visa-program-gives-entrepreneurs-permanent-residency-in-canada/

dropped over the previous year by 6% or 481,000 visitors. This drop is significant not only from tourist expenditures but decreased business meeting and social contact.

ABC's of Temporary Nonimmigrant Visas (NIV)

Classes of Nonimmigrant Visas (NIV) Issued In 2016 *Source: U.S. Department of State, Bureau of Consular Affairs*			
A	Foreign Government Official	113,581	
B	**Temporary Visitor for Business and Pleasure**	**8,072,189**	**78%**
C/D	Transit/Crew	331,514	
E	**Treaty Trader or Investor**	**64,329**	**1%**
F	**Student**	**502,214**	**5%**
G/N	NAFTA/NATO/International Organization Staff	103,872	
H	**Temporary Worker and Trainee**	**532,832**	**5%**
I	Foreign Information Media	14,536	
J	**Exchange Visitor**	**380,120**	**4%**
K	Fiance(e) of U.S. Citizen	44,252	
L	Intracompany Transferee	165,178	
M	**Vocational Student**	**10,694**	**1%**
O	**Person With Extraordinary Ability**	**28,171**	**2%**
P	**Athlete, Artist or Entertainer**	**35,695**	**2%**
Q, R, S, T, U	Cultural, Religious, Informants, Victims	10,485	
	Jobenomics Special Interest Group	**1,554,055**	**19%**
	Total Nonimmigrant Visas (NIV) Issued	**10,381,491**	

Highlighted in yellow are the E, F, H, J, M, O and P nonimmigrant visa categories of special interest to Jobenomics from a workforce and business development perspective. Persons With Extraordinary Ability (O-visa) should be given the red-carpet treatment and a fast-track to a green card if desired. To a lesser extent, the same should be true for talented or high-potential visitors, students, workers and trainees F, J, H, M and P categories. These 1,554,055 visitors by the very nature of their interest in America (education, training and work) would likely make great additions to the American labor pool and society. Moreover, they probably represent the top 5% in the global gene-pool.

In summary, foreign-born citizens tend to more entrepreneurial than native Americans. Since the U.S. economy needs more entrepreneurs, startup businesses and skilled labor, it would be logical to promote legal immigration from an Employment-Based Preference Immigration Visa standpoint as well as a skills-based recruiting and retaining perspective on Nonimmigrant Visa holders. Far too many talented foreign graduates from American colleges and universities are not afforded a green card opportunity and are forced to overstay their visa (making them illegals) or return home. From a Jobenomics perspective, the American immigration system is upside-down. Too much attention is afforded to illegal immigration and not enough to legal immigration. In the realm of legal immigration the emphasis should shift from an 86%/4% split been family-based and employment-based emphasis to a more balanced 50%/50% emphasis.

Small Business Statistics and Trends Section Summary. Small businesses are the primary engine of the U.S. economy and labor force. It is time that this engine needs a tune-up by the U.S. government and private sector leaders. In today's world of global competition and sclerotic GDP growth, small business creation and sustainment is paramount. The American laisse-faire approach to small business creation, and its massive potential for job creation, must be changed in order to achieve economic prosperity and competitiveness.

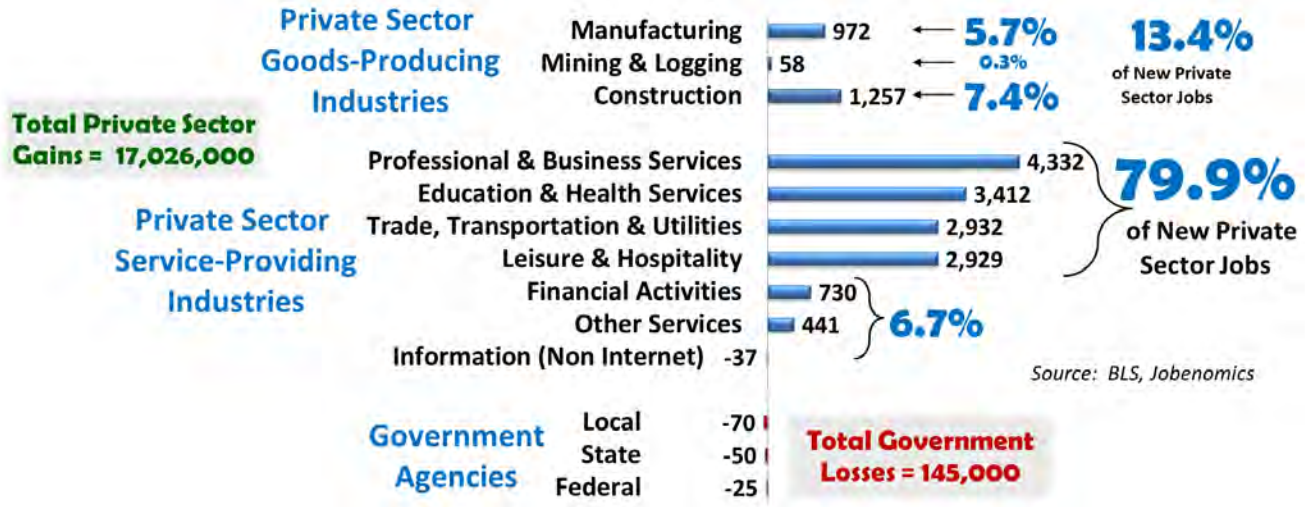
Fastest Growing Private Sector Industries, Occupations and Places

Fastest Growing Private Sector Industries. Since 2010, all ten U.S. private sector industries have created jobs, whereas all three levels of government (Federal, State and Local) government lost jobs.

Industry Employment Growth This Decade (2010s)

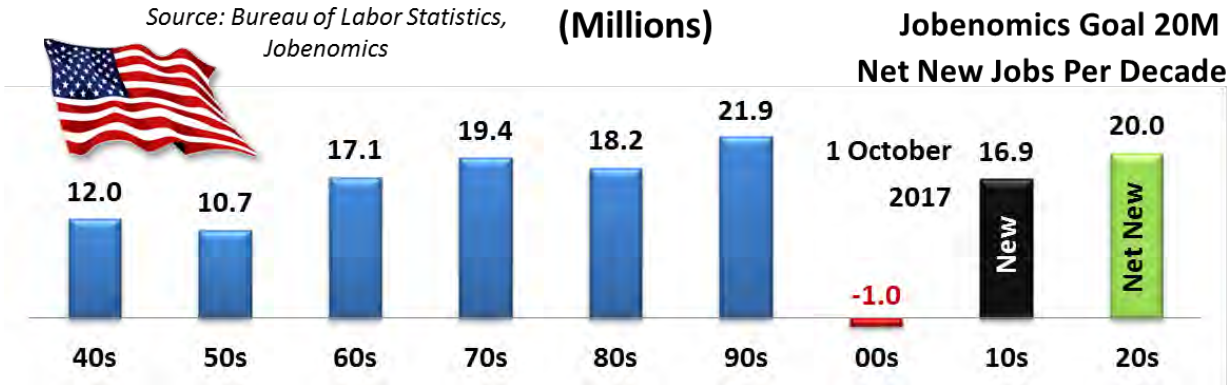
Thousands of Jobs (000s)

1 January 2010 to 1 October 2017



79.9% of all net new jobs this decade were produced by four service-providing industries (Professional & Business Services; Education & Health Services; Trade, Transportation &Utilities; and Leisure & Hospitality), while the other three service-providing industries (Financial Activities, Other Services, and Non-Internet Information) created only 6.7% combined. Manufacturing and Construction contributed 5.7% and 7.4% to U.S. employment growth, respectively. Government shed jobs at all three levels: federal, state and local.

Goal: 20 Million Net New U.S. Jobs per Decade



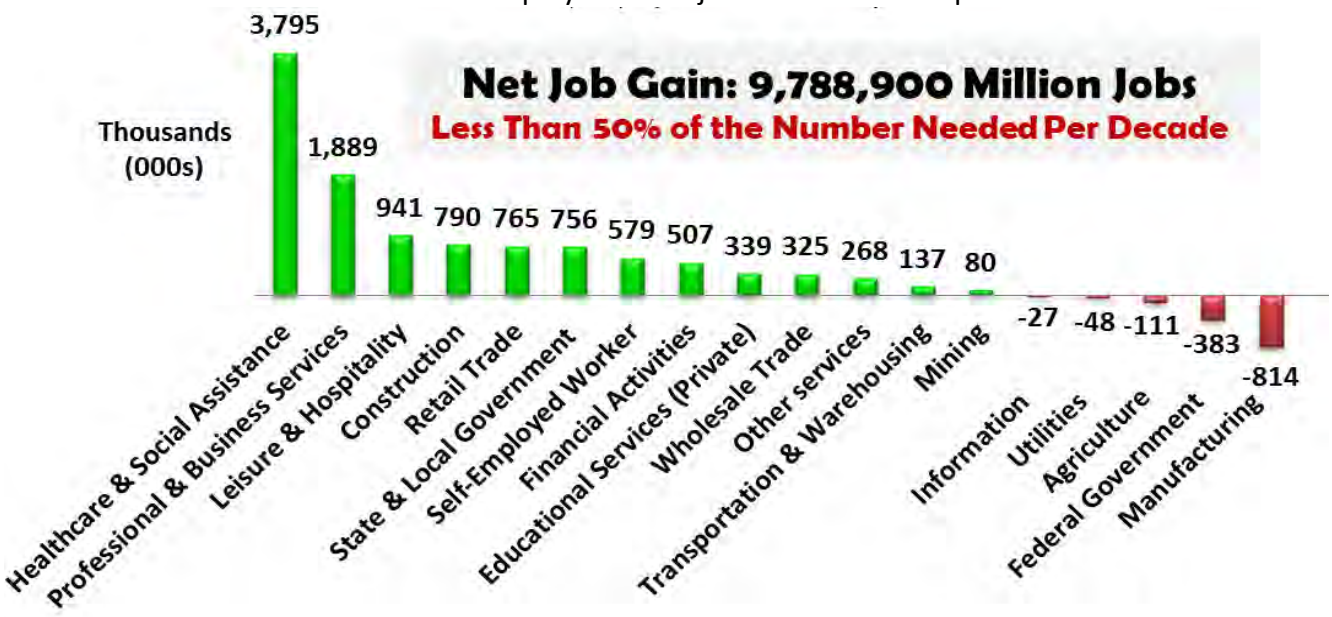
The United States consistently produced tens of millions of new jobs for six consecutive decades from the 1940s through the 1990s. The bottom fell out in the decade of the 2000s with a net loss of 1.0 million jobs. Consequently, it is critical that a significant number of new jobs are created each decade for the next several decades (2010s/2020s) to recover from the historic U.S. employment downturn in the 2000s and for the U.S. economy to prosper.

20 million net (workforce gains minus losses) new jobs per decade is a goal that has been historically achieved in the 1990s as well as many of the decades prior if adjusted for population growth. 20 million net new jobs is also the number needed to accommodate new labor force entrants and maintain an unemployment rate of 5%, which is considered a normal rate of unemployment. U.S. employment increased by 16.9 million so far this decade (2010s) and is likely—barring any financial downturns—to achieve 20 million new jobs, but not net new jobs if voluntary workforce departures are considered.

Fastest Growing Private Sector Occupational Groups. The latest BLS Employment Projections 2014-24 Report, released 8 December 2015, projects a future slowdown in labor force growth with only 9.8 million new jobs generated between 2014 and 2024. BLS sites the following reasons: an aging population, moderate GDP growth of 2.2% annually over the decade, productivity growth of 1.8% annually over the decade, a 2024 unemployment rate essentially the same as today, and moderated economic growth.[117] If this forecast is correct the United States is in significant trouble. 98 million jobs is **only half the number of jobs needed to effectively grow the economy**.

Fastest Growing Occupational Groups: 2014 to 2024

Source: BLS Employment Projections 2014-24 Report



Due to an aging population and greater numbers of able-bodied Americans voluntarily departing the U.S. labor force[118], 3.8 million of the 9.8 million new U.S. jobs (39%) will entail Healthcare and Social Assistance occupations. The second and third largest cadres are 1.9 million (19%) jobs in Professional & Business Services and 0.9 million (9%) jobs in Leisure & Hospitality (9%). Manufacturing is projected to be the biggest loser with a loss of 814,000 jobs. Manufacturing currently employs 12,392,000 people. If the BLS projection is accurate, manufacturing employment will decline to 11,448,000, which is below the historical post-WWII manufacturing low of 11,453,000 jobs.

[117] BLS, Employment Projections: 2014-24 Summary, http://www.bls.gov/news.release/ecopro.toc.htm

[118] See Jobenomics U.S. Labor Force & Unemployment Report Q3 2017 for a detailed discussion on voluntarily U.S. labor force departures.

Fastest Growing Private Sector Occupations. The BLS 2016-17 Occupational Outlook Handbook (OOH), the U.S. government's premier job market reference source, includes 576 detailed occupations (about 83% of total employment). [119]

Top 50 Growth Occupations: 2014 to 2024

Source: BLS, Occupational Outlook Handbook, Employment Projections, Table 1.3

No College Degree Required

No College Degree	Occupation	Number of Jobs In 2014	Number of New Jobs	Growth Rate	2014 Median Pay	$/Hour
1	Personal care aides	1,768,400	458,100	26%	$20,440	$9.83
2	Food and beverage serving workers	4,731,800	451,800	10%	$18,550	$8.92
3	Home health aides	913,500	348,400	38%	$21,380	$10.28
4	Retail salespersons	4,859,600	331,000	7%	$21,670	$10.42
5	Nursing assistants	1,545,200	267,800	17%	$25,090	$12.06
6	Customer service representatives	2,581,800	252,900	10%	$31,200	$15.00
7	Construction laborers	1,386,400	180,100	13%	$30,190	$14.51
8	Laborers and freight, stock, and material movers	3,719,300	175,500	5%	$23,560	$11.33
9	Medical assistants	591,300	138,900	23%	$29,960	$14.41
10	Janitors and cleaners	2,360,600	136,300	6%	$22,840	$10.98
11	Secretaries and administrative assistants	3,976,800	118,800	3%	$35,970	$17.30
12	Medical secretaries	3,976,800	118,800	3%	$35,970	$17.30
13	Licensed practical and licensed vocational nurses	719,900	117,300	16%	$42,490	$20.43
14	Sales representatives, wholesale and manufacturing	1,800,900	117,200	7%	$58,380	$28.07
15	Heavy and tractor-trailer truck drivers	1,797,700	98,800	5%	$39,520	$19.00
16	Receptionists and information clerks	1,028,600	97,800	10%	$26,760	$12.87
17	Cooks, restaurant	2,290,800	97,000	4%	$21,120	$10.16
18	Office clerks, general	3,062,500	95,800	3%	$28,670	$13.78
19	Billing and posting clerks	1,426,500	89,300	6%	$36,230	$17.44
20	Computer user support specialists	766,900	88,800	12%	$50,380	$24.22
21	Electricians	628,800	85,900	14%	$51,110	$24.57
22	Stock clerks and order fillers	2,924,300	84,700	3%	$25,810	$12.41
23	Maintenance and repair workers, general	1,374,700	83,500	6%	$36,170	$17.39
24	Teacher assistants	1,234,100	78,600	6%	$24,430	$11.74
25	Landscaping and groundskeeping workers	1,282,000	77,600	6%	$24,810	$11.93
26	Industrial machinery mechanics	464,400	73,400	16%	$47,450	$22.82
27	Childcare workers	1,260,600	69,300	5%	$19,730	$9.48
28	Waiters and waitresses	2,465,100	68,900	3%	$18,730	$9.01
29	Cashiers	3,424,200	67,000	2%	$19,060	$9.16
30	Hairdressers, hairstylists, and cosmetologists	656,400	64,400	10%	$23,200	$11.15
31	Carpenters	945,400	60,400	6%	$40,820	$19.63
32	Bartenders	580,900	60,100	10%	$19,050	$9.16
33	Dental assistants	318,800	58,600	18%	$35,390	$17.02
34	Emergency medical technicians and paramedics	241,200	58,500	24%	$31,700	$15.24
35	Security guards	1,102,500	55,000	5%	$24,470	$11.76
36	Food preparation workers	873,900	54,800	6%	$19,560	$9.40
	Requiring No College Degree	65,082,600	**4,881,100**	7%		***Below $15 Min Wage***

[119] BLS, 2016-17 Occupational Outlook Handbook, Table 1.3, http://www.bls.gov/ooh/

36 of the top 50 fastest growing OOH occupations require less than a college degree. As highlighted in red, 25 out the 36 non-college occupations are projected to make less than $15 per hour, the hourly "livable" wage benchmark. Within the top 36 non-college degree occupations, the number of projected new jobs range from a high 458,100 new personal care aid jobs to a low of 54,800 food preparation worker job openings over the next decade (2014-2024). In the base year (2014), the labor pool of these combined 36 occupations was 65,082,600 workers with an average projected growth rate of 7%, which should generate 4,881,100 net new jobs over the ten-year period.

College Degree Required

College Degree	Occupation	Number of Jobs In 2014	Number of New Jobs	Growth Rate	2014 Median Pay	$/Hour
1	Registered nurses	2,751,000	439,300	16%	$66,640	$32.04
2	Software developers	2,228,000	373,200	17%	$97,990	$47.11
3	General and operations managers	2,467,500	147,000	6%	$102,750	$49.90
4	Accountants and auditors	1,332,700	142,400	11%	$69,940	$31.70
5	Management analysts	758,000	103,400	14%	$80,880	$38.89
6	Computer systems analysts	567,800	118,600	21%	$82,710	$39.76
7	Physicians and surgeons	708,300	99,300	14%	$187,200	$90.00
8	Market research analysts and marketing specialists	495,500	92,300	19%	$61,290	$28.47
9	Elementary school teachers	1,517,400	87,800	6%	$53,760	$25.84
10	Personal financial advisors	249,400	73,900	30%	$81,060	$38.97
11	Physical therapists	210,900	71,800	34%	$82,390	$39.61
12	Medical and health services managers	333,000	56,300	17%	$92,810	$44.62
13	Secondary school teachers	961,600	55,900	6%	$56,310	$26.87
14	Computer and information systems managers	348,500	53,700	15%	$127,640	$61.37
	Requiring College Degree	14,929,600	**1,914,900**	13%		
	Top 50 Total	80,012,200	**6,796,000**	8%		
	Bottom 526 Occupations	70,527,700	**2,992,900**	4%		
	Grand Total Employment/Jobs	150,539,900	**9,788,900**	7%		

These 14 college-decreed occupations are projected to generate 1,914,900 new jobs over the 10-year period with substantially higher wages than average. The two occupations that will produce the majority of new jobs include 439,300 registered nurses ($66,640 median pay in 2014) and 373,200 software developers ($97,990 median pay). The two highest paying occupations are 99,300 new physicians and surgeons ($187,000 median pay) and 53,700 new computer and information systems managers ($127,640 median pay).

According to the OOH, in 2014, the top 50 occupations listed above employed 80,012,200 (53%) and the bottom 526 OOH occupations employ 70,527,000 Americans (47%) out of a total 150,539,900 employed Americans. Within the top 50, 14 college degree plus occupations are projected to grow at 13%. Within the top 50, the 36 occupations that do not require a college degree will grow at about half the rate (7%). Rate of growth for the bottom 526 occupations (not shown) are projected to grow at 4%.

Best and Worst Places to Work. The Quarterly Census of Employment and Wages, conducted by the U.S. Census Bureau and interpreted by the BLS, reports on employment and wages by state (including

5 territories and District of Columbia and the 384 Metropolitan Statistical Areas (MSAs).[120] The top five in each category are shown. The disparity between the best and worst locations for jobs and wages is significant.

Best and Worst States & Territories to Work

Source: Quarterly Census of Employment and Wages, Q1 2017

	Number of Jobs		Number of Businesses		Average Weekly Wage	
Top 5 States	California	14,333,023	California	1,476,745	Washington DC	$1,758
	Texas	10,032,430	Florida	673,265	New York	$1,607
	New York	7,746,835	Texas	650,948	Massachusetts	$1,464
	Florida	7,446,083	New York	632,142	Connecticut	$1,452
	Illinois	5,052,906	Illinois	399,046	New Jersey	$1,347
Bottom 5 States	South Dakota	339,453	South Dakota	30,613	South Dakota	$821
	North Dakota	332,880	North Dakota	29,720	New Mexico	$881
	Vermont	251,517	Wyoming	24,513	Montana	$779
	Alaska	234,428	Vermont	23,834	Idaho	$778
	Wyoming	195,156	Alaska	20,034	Mississippi	$733
Average of States and Terrorities		4,558,485		361,875		$1,031

Top 5Metropolitan Areas to Work

Source: Quarterly Census of Employment and Wages, Q1 2017

Number of Jobs	
New York-Newark-Jersey City, NY-NJ-PA MSA	7,837,209
Los Angeles-Long Beach-Anaheim, CA MSA	5,207,432
Chicago-Naperville-Elgin, IL-IN-WI MSA	3,888,322
Dallas-Fort Worth-Arlington, TX MSA	2,986,725
Houston-The Woodlands-Sugar Land, TX MSA	2,490,717

Average Weekly Wage	
San Jose-Sunnyvale-Santa Clara, CA MSA	$2,516
Bridgeport-Stamford-Norwalk, CT MSA	$2,024
San Francisco-Oakland-Hayward, CA MSA	$1,874
New York-Newark-Jersey City, NY-NJ-PA MSA	$1,733
Boston-Cambridge-Newton, MA-NH MSA	$1,601

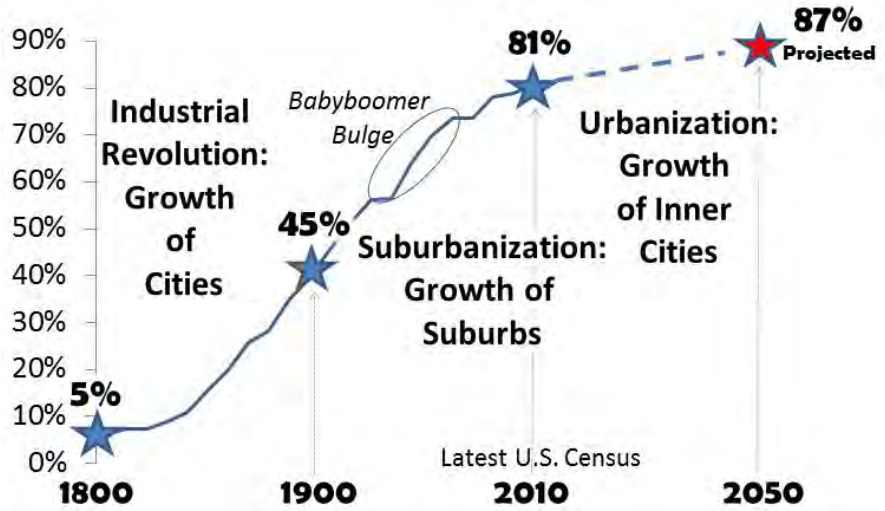
The main takeaway from the Quarterly Census of Employment and Wages Report is geographical polarization. America is becoming increasingly polarized in terms of jobs and wages according to

[120] BLS, Quarterly Census of Employment and Wages, Q1 2017, Private, Total, All Industries, http://www.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables

location. Urban areas offer more career and income opportunities than rural areas. High tech and financial cities are superior to older manufacturing cities that continue to slide into decay.

Urbanization of America

Source: U.S. Census Bureau[121]



In 1800, 95% of America lived in rural areas. Today, 81% live in urban areas (90% on the West Coast). The top ten U.S. metropolitan areas employ over 32 million people or 20% of the U.S. workforce.

For the first time in over 100-years, starting in 2011, workforce migration started from the suburbs to the inner city. Consequently, urban areas are getting increasingly denser, diversified and polarized. Job polarization occurs when middle-class jobs that require moderate skill levels and income, decline relative to those at the top and bottom, requiring relatively greater or fewer skills and income.

Technology is also creating a form of job polarization between traditional full-time employees and part-time contingency workers who have to cobble together an income from task-oriented work, several part-time jobs, or supplement their income from government subsidies or seeking unreported income opportunities in America's $2 trillion per year underground economy (also known as the shadow, cash or barter economy).

As evidenced by recent protests and violence, the United States has already reached a point of restiveness and anger due to urbanization and job polarization—for plausible reasons. As discussed in detail the Jobenomics U.S. Labor Force & Unemployment Report, 72% of the 160 million American wage earners made below the median wage of $54,964. If one adds the 95 million able-bodied adults that have departed the labor force and have no reported income, the percentage of below average income Americans jumps to 82%. Plus there is an additional 70 million Americans who cannot work, such as children, retired and disabled citizens. In other words, the United States has reached a point where 45 million Americans receive above median wage and 279 million Americans report below median wage or no wage at all.

[121] U.S. Census Bureau, Geography, 2010 Census Urban and Rural Classification and Urban Area Criteria, http://www.census.gov/geo/reference/ua/urban-rural-2010.html

From a Jobenomics perspective, these trends can and should be reversed before geographic polarization solidifies job polarization that is already creating grave disparities between the rich and poor, the skilled and unskilled, and the standard full-time workers and nonstandard part-time contingent workforce.

Contingent Workforce Challenge

The Bureau of Labor Statistics (BLS) defines the contingent workforce as the portion of the labor force that has "nonstandard work arrangements" or those without "permanent jobs with a traditional employer-employee relationship".

The "contingent" workforce could be the predominant source of employed U.S. labor by 2030, or sooner, depending on economic conditions and seven ongoing labor force trends. Today, Jobenomics estimates the contingent workforce to be a little over 60,000,000 employed Americans or 40% of the total employed workforce. By 2030, this will rise to approximately 90,000,000, or 50%, of the total employed workforce.

U.S. Contingent Workforce Size Estimates 1998 to 2030

Source: GAO Contingent Workforce Report (GAO-15-168R), Tables 3 & 4, Jobenomics Estimates

	BLS/GAO 1995 CWS	BLS/GAO 1999 CWS	BLS/GAO 2005 CWS	GSS 2006	GSS 2010	Jobenomics 1 Oct 2017*	Jobenomics 2030 Est.
Employed	123,208,000	131,494,000	138,952,000	143,150,000	138,438,000	154,345,000	180,000,000
Contingent	39,549,768	39,448,200	42,519,312	50,531,950	55,790,514	61,738,000	90,000,000
Workforce	32.1%	30.0%	30.6%	35.3%	40.3%	40.0%	50.0%

**Total Farm and Nonfarm Employment (CPS Data, LNS12000000)*

Jobenomics' 2017 estimate of 40% for core and non-core contingency workers is roughly equivalent to the GAO's high water mark of 40.4% of the U.S. labor force in 2010[122] and Bloomberg's contingency workforce estimate of 40% for 2020.[123] Jobenomics' 2017 estimate is similar to estimates from other developed economies. For example, in Japan, contingent workers (non-regular workers) accounted for up to 50% of younger Japanese workers and 40% of the total Japanese labor force in 2014, up from 10% in 1990.[124]

Defining the Contingent Workforce. To understand the contingent labor force, it is necessary to first know what U.S. government agencies (Bureau of Labor Statistics, Census Bureau, Government Accountability Office and others) say about part-time, temporary, nonstandard, independent, or workers with "alternative" work agreements, who are collectively defined as contingent workers.

According to an April 2015 study by the Government Accountability Office (GAO), compared to the traditional workforce, the size, character, earnings and benefits of today's contingent workers are largely unknown to U.S. Department of Labor and U.S. policy-makers. Quoting the GAO, "there is a lack of consensus on how to define contingent work, in part because researchers focus on different aspects of the labor market. Some definitions focus on job tenure or the precariousness of work, while some focus on employer-employee relationships. Available data thus produces varying estimates of the size of this workforce, depending on definition. Available data also does not fully

[122] U.S. Government Accountability Office, Contingent Workforce: Size, Characteristics, Earnings, and Benefits, 20 April 2015, http://www.gao.gov/products/GAO-15-168R

[123] Bloomberg Businessweek, 20-25 October 2014 Edition, Companies/Industries, Page 20

[124] Asia-Pacific Journal, Scott North, "Limited Regular Employment and the Reform of Japan's Division of Labor", The Asia-Pacific Journal, Vol. 12, Issue 15, No. 1, April 14, 2014, http://www.japanfocus.org/-Scott-North/4106/article.html

enable analysis of trends in the size of the contingent workforce or the effects of economic cycles, such as the recent recession." [125]

As a result, there is no government consensus on the magnitude of the contingent workforce. Estimates vary from a low of 5% to a high of 40% of the total U.S. employed workers in 2017. Jobenomics asserts that 40% is the most reasonable estimate. Jobenomics also asserts that this percentage will continue to increase and exceed 50% of the employed labor force by 2030, or sooner, based on seven labor force trends, described herein, and the state of the economy. Unlike standard employment growth, contingent employment will increase whether the economic conditions are positive, neutral or negative. Neutral and negative economies usually reduce full-time labor and increase part-time contingent labor and task-oriented work.

Generally speaking, policy-makers view the contingent workforce as a relatively insignificant portion of the U.S. labor force. They also view contingent workers more as a governmental liability than a public asset. The prevailing view of policy-makers is that most contingent workers receive lower wages and fewer employer-provided retirement and health benefits compared to standard workers. As a result, these workers are compelled to turn to government welfare and other means-adjusted programs for assistance. While this is true for the low-end of the contingency workforce, it is not necessarily the case for top-end contingency workers who chose nonstandard work as a matter of choice.

Largely due to the current traditional workforce focus of Census Bureau/BLS survey questions, policy-makers are unaware of the fact that contingent work is no longer an aberration, but a key component of the labor force (60 million contingent workers versus 90 million standard workers). In addition, a growing number of contingent workers do want full-time jobs and traditional careers. 90% of independent contractors and self-employed workers reported in the last BLS Contingent Workforce Survey that they would not prefer a different type of employment from the one they have.[126] Uber drivers, apps developers, fracking industry wildcatters and knowledge workers are just some of many examples of the upside of the growing contingent workforce in occupations that did not even exist a decade ago.

The BLS defines the contingent workforce as the portion of the labor force that has "nonstandard work arrangements" or those without "permanent jobs with a traditional employer-employee relationship". The BLS further makes a distinction between contingent and alternative employment agreements. According to a BLS special supplemental survey conducted in February 2005 (the last contingent workforce survey conducted by the BLS), "Contingent workers are persons who do not expect their jobs to last or who reported that their jobs are temporary. They do not have an implicit or explicit contract for ongoing employment. Alternative employment arrangements include persons

[125] U.S. Government Accountability Office, GAO-15-168R, Contingent Workforce: Size, Characteristics, Earning and Benefits, 20 April 2015, http://www.gao.gov/assets/670/669766.pdf
[126] Ibid, Job Satisfaction, Table 12: Estimated Percentage of Workers Who Want a Different Type of Employment, 2005

employed as independent contractors, on-call workers, temporary help agency workers, and workers provided by contract firms."[127]

A 2015 GAO report, entitled the "Contingent Workforce: Size, Characteristics, Earnings, and Benefits", grouped contingency workers into two categories: core and non-core.

- The core category includes agency temps, direct-hire temps, on-call workers and laborers and contract company workers who are characterized as low wage earners who are subjected to nonstandard work arrangements **out of necessity**. Core workers cede control over their work making them economically dependent on employers. Consequently, a disproportionate number of these involuntary core workers are subject to exploitation in terms of wages and benefits.
- The non-core category includes independent contractors, self-employed workers and standard part-time workers who work fewer than 35 hours per week as a **matter of choice** and are economically independent by volition.

From a social science perspective, the major difference between core and non-core work involves social compact, an implicit contract for remuneration and protection in exchange for surrendering personal liberties. Relational employer-employee social compacts that evolved over the 20th Century are now less enforceable in today's transactional society. Relational social compacts emphasize mutual-interests whereas transactional social compacts promote self-interests. Relational compacts better accommodate low-skilled, risk-adverse, vulnerable core contingent workers who are dependent on near-term wages and benefits. Transactional compacts favor skilled non-core contingent workers who tend to be more self-directed, entrepreneurial and self-supporting.

Consequently, Jobenomics believes that America needs a dual contingent workforce strategy to (1) minimize low-end core contingent workers and (2) maximize top-end non-core contingent workers with emphasis on individuals and occupations with the highest need and potential.

According to many labor force experts, new workforce entrants (e.g., Generation Z "Screenagers" and Generation Y "Millennials") prefer contingent work over standard work for a number of reasons including self-direction, variety, flexibility and skill development. In addition Screenagers and Millennials exhibit a general disillusionment with traditional corporate social compacts and promises that have proven to be short-lived with older generations. Screenagers and Millennials also understand that traditional workforce growth is highly dependent on a robust economy, whereas contingent workforce growth is more resistant to economic fluctuations.

The rise of the contingent workforce is not unique to the United States. Furthermore, contingent work is being embraced by foreign policy-makers to a greater extent than in America. Japan serves as a good example. Japanese contingent workers (called non-regular workers) accounted for up to 50% of younger Japanese workers and 40% of the total Japanese labor force in 2014, up from 10% in

[127] U.S. Bureau of Labor Statistics, Contingent and alternative employment arrangements, retrieved 23 January 2016, http://www.bls.gov/cps/lfcharacteristics.htm#contingent, and http://www.bls.gov/news.release/pdf/conemp.pdf

1990.[128] In 2015, Japanese Prime Minister Shinzo Abe announced policies to make it easier for companies to dismiss standard workers in favor of contingency workers in order to make Japanese companies more competitive. An aging Japanese population will also fuel contingent work growth in Japan as retired workers and older women are seeking part-time work to supplement income in a struggling national economy.

Policy-makers in other parts of Asia and many countries in Western Europe are also actively preparing for the possibility of contingent work becoming the dominant element of their national labor force. China's 13th Five-Year Plan, a roadmap for the nation's development from 2016 to 2020, emphasizes the need to create a policy environment that can foster homegrown contingent workforce development and investment with emphasis on micro and self-employed businesses engaged in the emerging digital economy (e-business, e-commerce and e-retailing).

Estimating the Size of the Contingent Workforce. Out of approximately 150 million (nonfarm and farm) employed American workers in 2017, 60 million people are in the contingent workforce (part-time, self-employed, independent contractors, temporary workers, on-call and day laborers).

According to a Harvard study, from February 2005 to November 2015, almost all employment growth (9.7 million) in the U.S. labor force occurred in the contingent workforce (9.4 million) as opposed to the standard labor force.[129]

To understand the size of the U.S. labor force and its contingent workforce component, one must have a basic knowledge on how data is collected by the government.

The two primary sources of data are from joint Census Bureau/BLS household surveys and BLS industry surveys. The "Household" survey collects data via the Current Population Survey (CPS) and the "Establishment" payroll survey via the Current Employment Survey (CES).[130]

- CPS Household data is collected monthly from a sample from over 60,000 American households and includes comprehensive data on the labor force, the employed, and the

[128] Asia-Pacific Journal, Scott North, "Limited Regular Employment and the Reform of Japan's Division of Labor", The Asia-Pacific Journal, Vol. 12, Issue 15, No. 1, April 14, 2014, http://www.japanfocus.org/-Scott-North/4106/article.html
[129] Harvard University and NBER, The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015, Lawrence F. Katz and Alan B. Krueger, 29 March 2016, page 7-8, https://krueger.princeton.edu/sites/default/files/akrueger/files/katz_krueger_cws_-_march_29_20165.pdf
[130] U.S. Bureau of Labor Statistics, Household vs. Establishment Series, http://www.bls.gov/lau/lauhvse.htm#hvse

unemployed classified by such characteristics as age, sex, race, family relationship, marital status, occupation and industry attachment. The CPS also provides data on the characteristics and past work experience of those not in the labor force. The CPS includes all workers, nonfarm and farm, and estimates current total employment at 153 million.

- CES Establishment data is collected monthly from a sample of approximately 143,000 businesses and government agencies representing approximately 588,000 worksites throughout the United States. The primary statistics derived from the CES survey are monthly estimates of employment, hours, and earnings for the nation, states, and major metropolitan areas. CES produces estimates on the number of employees on nonfarm payrolls, average hourly earnings, average weekly earnings, and average weekly hours.[131] The CES includes only nonfarm workers and estimates current nonfarm employment at 146 million.

CPS and CES data are reported in the BLS monthly Employment Situational Report and various BLS Supplements to the Current Population Survey. The monthly BLS Employment Situational Report is a widely read government report used for policy-making in the United States.

BLS Supplements are also important since they provide a significant level of detail for public and private analyses. It is important to recognize that these BLS reports and supplements are focused mainly on standard workers who are employed by nonfarm, industry-centric and employer-providing firms. Agricultural (farms and ranches) and nonstandard (contingent) worker data is sparse and episodic due to historical precedent and budgetary constraints.

The BLS Employment Situational Report's focal point is on the "civilian noninstitutional population" that consists of three main categories: "Employed", "Unemployed" and "Not in Labor Force". To be Employed, one must have a job. To be Unemployed, one must be looking for a job. To be Not-in-Labor-Force, one must be an able-bodied adult who is neither employed nor unemployed.

The overwhelming amount of BLS statistical labor force data is centered on statistics relating to the 145 million nonfarm Employed Americans, who are accounted in three general sectors (private sector goods-producing, private sector services-providing and government) that are subdivided into 13 industry groups and further subdivided into 130 industries. Since the BLS defines contingent workers as those without "an explicit or implicit contract for long-term employment", their focus is on the temporary nature of work. Consequently, those that chose not to work or work outside traditional labor occupations receive much less scrutiny and analysis.

Jobenomics applauds the work the BLS accomplishes with standard industries, but believes that the U.S. government should allow the BLS to evaluate at super sectors, like energy and healthcare, and major trends, like the contingent workforce and Not-in-Labor-Force group, with the same intensity.

To a lesser degree, BLS Employment Situational Report contains data on 15 million unemployed Americans who are accounted in six unemployment categories from U1 Long-Term Unemployed to

[131] BLS, CES Survey Frequently Asked Questions, http://www.bls.gov/web/empsit/cesfaq.htm

U3 Officially Unemployed to U6 Unemployed and Underemployed. To a minimal degree, the BLS reports on the 95 million people who are categorized in a single Not-in-Labor-Force category that is reserved for able-bodied Americans who can work but chose not to work for a variety of reasons. Jobenomics sees the evergrowing Not-in-Labor-Force, which has grown by 25.5 million Americans since year 2000, as impactful to the U.S. labor force as the rise in the contingent labor force. The Unemployed and Not-in-Labor-Force is addressed in the Jobenomics U.S. Labor Force & Unemployment Report.

The CPS is also used to collect data for a variety of other studies. Supplements cover a wide variety of topics depending on the needs of the supplement's government sponsor, including a BLS sponsored Contingent Workforce Supplement (CWS). A total of five CWSs were conducted by the BLS in 1995, 1997, 1999, 2001 and 2005. Since the 2005 CWS, the BLS repeatedly requested that the CWS be reinstated.[132] After a 10-year hiatus, the BLS will now resume the CWS. In the FY2016 Budget, out of a total BLS budget of $637.4 million, the BLS was granted $1.6 million and 3 full-time equivalent personnel to conduct a CWS every two years.[133]

Even though the CWS budget is only ¼ of 1% of the overall BLS budget, Jobenomics contends that resumption of the CWS will be a vitally important first step to laying a framework in understanding the contingent workforce's size, character and impact on the U.S. labor force and economy. However, Jobenomics is concerned that the BLS has historically been constrained by key worker protection laws that focus surveys on employees of standard companies as opposed to non-core contingent workers who are not classified as employees. Without a complete analysis of the entire contingent workforce spectrum (core and non-core, standard and nonstandard, or contingent and alternative work arrangements), it will be impossible for policy-makers to assess the degree of influence that the contingent workforce is having on the labor force.

U.S. Core and Non-Core Contingent Workforce Size Estimates

Source: GAO Contingent Workforce Report (GAO-15-168R), Tables 3 & 4, Jobenomics Estimates

	BLS/GAO 1995 CWS	BLS/GAO 1999 CWS	BLS/GAO 2005 CWS	GSS 2006	GSS 2010	Jobenomics 1 Oct 2017*	Jobenomics 2030 Est.
Employed	**123,208,000**	**131,494,000**	**138,952,000**	**143,150,000**	**138,438,000**	**154,345,000**	**180,000,000**
Contingent	**39,549,768**	**39,448,200**	**42,519,312**	**50,531,950**	**55,790,514**	**61,738,000**	**90,000,000**
Workforce	**32.1%**	**30.0%**	**30.6%**	**35.3%**	**40.3%**	**40.0%**	**50.0%**

Total Farm and Nonfarm Employment (CPS Data, LNS12000000)

	Agency & direct-hire temps, On-call workers & day laborers, Contract company workers						
Core	**7,269,272**	**7,495,158**	**7,781,312**	**10,163,650**	**10,936,602**	**12,347,600**	**21,600,000**
Contingent	5.9%	5.7%	5.6%	7.1%	7.9%	8.0%	12.0%
	Independent contractors, Self-employed workers, Standard part-time workers						
Non-Core	**32,280,496**	**31,953,042**	**34,738,000**	**40,368,300**	**44,853,912**	**49,390,400**	**68,400,000**
Contingent	26.2%	24.3%	25.0%	28.2%	32.4%	32.0%	38.0%

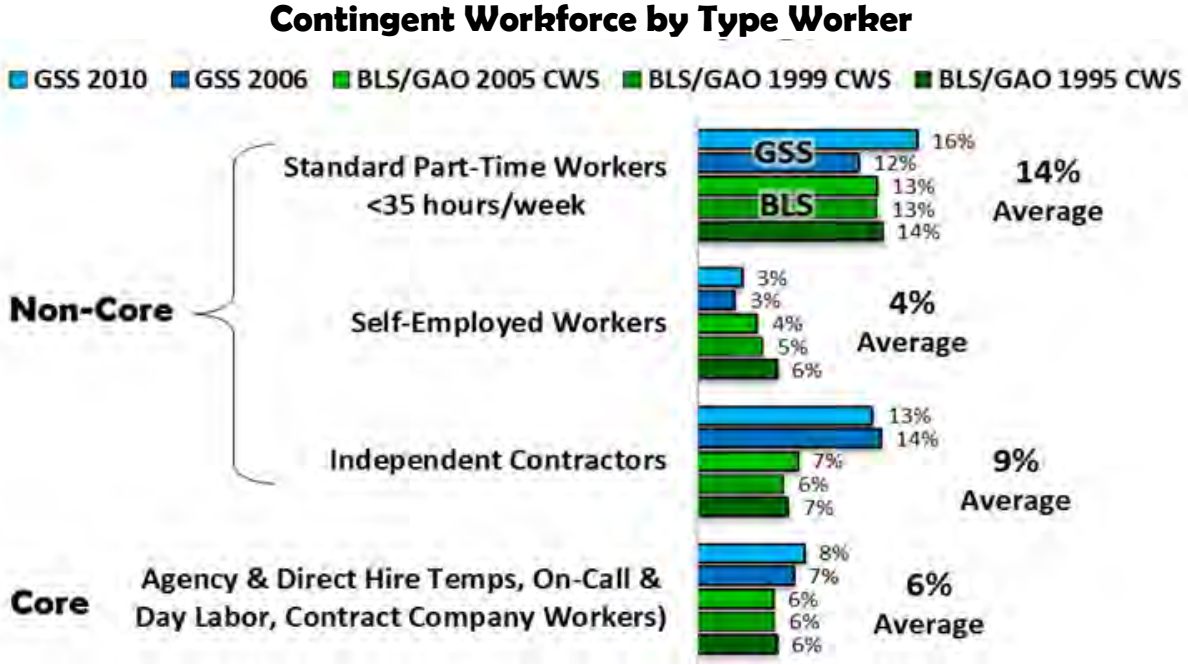
[132] U.S. Government Accountability Office, GAO-15-168R, Contingent Workforce: Size, Characteristics, Earning and Benefits, 20 April 2015, Background, page 3, http://www.gao.gov/assets/670/669766.pdf

[133] FY 2016 Congressional Budget Justification Bureau Of Labor Statistics, Labor Force Statistics, CWS, pages BLS-1 and BLS-11, http://www.dol.gov/sites/default/files/documents/general/budget/2016/CBJ-2016-V3-01.pdf

This chart was derived from the GAO's GAO Contingent Workforce Report that compared historical surveys (CWS, CES Establishment, CPS Household, CPS Disability, CPS Annual Social and Economic Supplement, NORC General Social [GSS], Survey of Income and Program Participation).[134] Jobenomics 2016 and 2030 estimates are also included.

Using composite data from multiple sources, the GAO estimates core and non-core contingent workers between 5.7% to 7.9% and 24.3% to 32.4% respectively, for a total of approximately 30% to 40% of the employed labor force. As of 1 October 2017, the total number of U.S. employed (farm and nonfarm) is 154,345,000 million people.[135] Using the 30% and 40% figures, a total of 46 to 62 million Americans would be considered contingent workers. By 2030, at 50% of all employed workers, the United States would have a total of 90 million contingency workers and 90 million standard full-time workers. By 2030, Jobenomics estimates that 12% (21,600,000) will be core contingency workers and 38% (68,400,000) non-core contingency workers. If a major financial downturn occurs, the core percentage could be much higher.

The recent growth in 1099 workers (IRS Form 1099-MISC used by independent contractors, aka contingent workers) suggests a massive transition from full-time to contingent work this decade. In 2010, 82 million 1099s were sent to the IRS. By 2014, the number grew to 91 million for a total of 9 million for the four-year period or roughly 22 million if extrapolated for the entire decade. It should be noted that 1099s are only filed for wages over $600. Many contingent workers, like apps developers, are working for zero wages with the hope of a large future payoff or jobs with leading network-centric corporations.



[134] GAO, Contingent Workforce Report (GAO-15-168R), Tables 3 & 4, 20 April 2015, http://www.gao.gov/assets/670/669766.pdf

[135] BLS, Labor Force Statistics from the Current Population Survey, (Seas) Employment Level (LNS12000000). 25 July 2017

Within the contingent workforce, standard part-time workers are the largest group, at 14%, of all employed workers, followed by independent contractors at 9%, self-employed workers at 4% and core group workers at 6%. It appears that only the incorporated self-employed number were included (5.8 million), not including the unincorporated self-employed (9.4 million), which is consistent with the Jobenomics premise that government surveys are focused on incorporated businesses in existing nonfarm industries. It is also important to note that the number of incorporated self-employed businesses has grown by 35% since year 2000, giving credence to the notion that non-core contingent businesses are an important faction of the U.S. labor force and overall economy—a faction that is neither well reported nor understood.

Jobenomics Contingent Workforce 50%+ Forecast (Seven Major Factors).

By 2030, or sooner, Jobenomics forecasts that contingency workers will be the dominant (over 50%) component of the U.S. workforce. This forecast is based on seven factors: (1) increasing labor force losses versus labor force gains, (2) adverse corporate hiring and employment practices, (3) revolution in energy and network technologies, (4) impact of the emerging digital economy, (5) automation of the labor force, (6) shift from full-time, to part-time and task-oriented labor, and (7) cultural differences of new labor force entrants.

(1) Increasing labor force losses versus labor force gains. The U.S. labor force took an ominous reversal at the beginning of the 21st Century when able-bodied adult workforce departures dramatically outpaced the number of people entering the labor force.

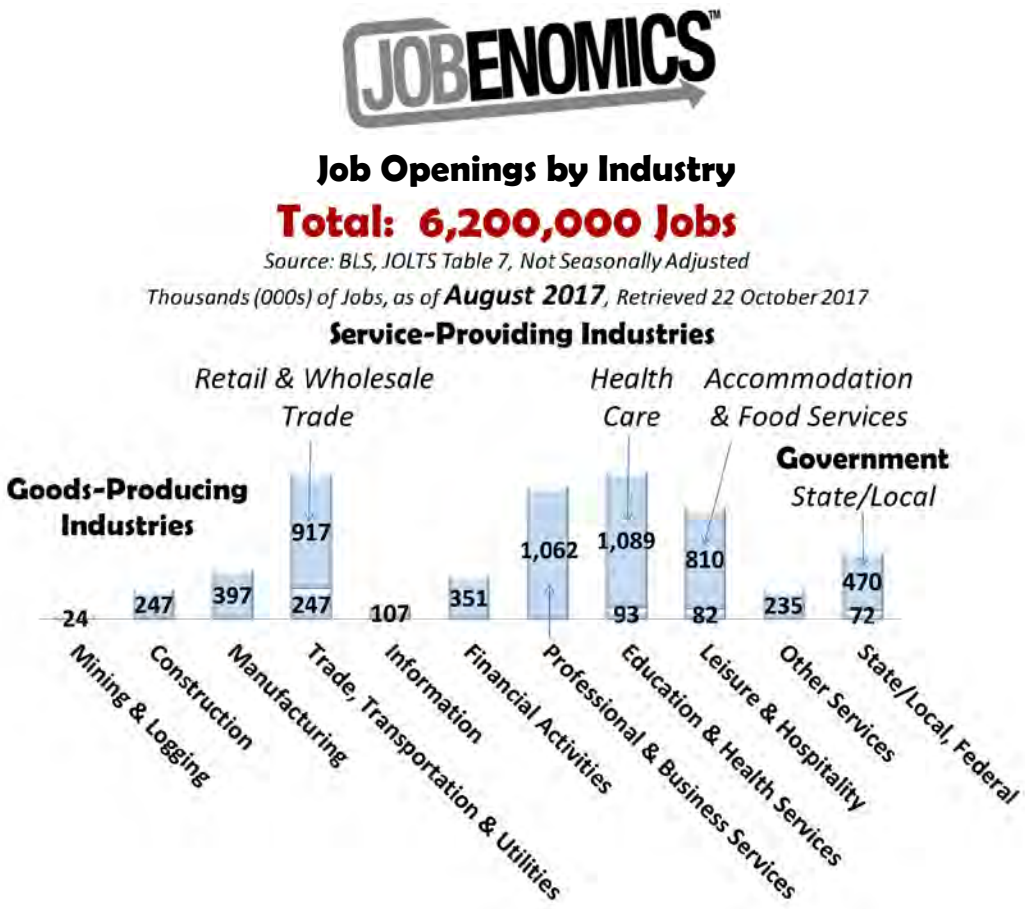
During the 1980s and 1990s, voluntary departures were 366% less than employment gains (40.1 million versus 8.6 million). From the beginning of year 2000 through Q3 2017, voluntary departures were 62% more than employment gains (15.9 million versus 25.8 million). From a Jobenomics standpoint, this labor force reversal is largely due to the poor economic conditions, conservative hiring practices, use of technology to automate and outsource work to continent workers, and attractiveness of government welfare and means-adjusted assistance programs.

Without significant jobs growth in conjunction with a meaningful reduction of voluntary departures, the U.S. economy is not sustainable, middle-class wages will continue to erode, consumption (70% of U.S. GDP) is likely to falter, and another recession is probable. Consequently, it is imperative that policy-makers, decision-leaders and business executives aggressively create employment opportunities that will motivate citizens towards workfare over welfare and self-sufficiency over public/familial dependence.

The best way to motivate contingent workers is to emphasize the plethora of employment opportunities afforded by the millions of open U.S. jobs, the fastest-growing service industries that are generating vast majority of all new jobs, by the millions of new opportunities that are available via the ongoing energy technology and network technology revolutions, and mass-producing small and self-employed businesses.

According to the most recent BLS Job Openings and Labor Turnover Survey (JOLTS), there are 6,200,000 job openings in the United States. [136]

[136] BLS, Job Openings and Labor Turnover Survey (JOLTS), http://www.bls.gov/news.release/jolts.htm



The JOLTS report calculates the number and rate of job openings, hires, and separations for the nonfarm sector by industry and geographic region. As shown, the four private sector industries that have the largest number of openings are: Professional & Business Services (1,062,000), Healthcare (1,089,000), Accommodation & Food Services (810,000) and Retail & Wholesale Trade (767,000). State and local government have 470,000 openings that are likely to remain unfilled due to budget constraints. The primary reason for the large number of private sector job openings is due to the lack of job skills. The secondary reason is due to economic uncertainty.

Contingent work and new non-core contingency businesses are an important component of fulfilling these opportunities—a component that has not been aggressively supported in the United States. These open jobs can be filled by a combination of new full-time hires or contingent labor (independent contractors, consultants and part-time task-oriented workers). Now is the time to plan and create meaningful employment and income opportunities for the contingency workforce.

(2) Adverse corporate hiring and employment practices. From 2010 to 2017, small businesses created 3.4-times as many jobs as big businesses. Today, major corporations make more money on money than on people-made goods or people-provided services. Since the end of the Great Recession in 2009, big business received numerous government incentives and low interest loans compared to small businesses. Rather than using these incentives to recapitalize, most corporations understandably used the money to buy back stock, merge, acquire and invest in the secondary market. The net result of these actions was stronger corporations and a weaker labor force. If not for small business, the U.S. labor force would be much smaller than it currently is.

While it is essential that the United States maintain strong corporations, it is equally essential to develop a strong labor force. Major corporations must play a larger role in developing skills, jobs and

startup businesses to fill open private sector jobs, provide meaningful wages to contingent workers and helping to provide opportunities for small business development.

U.S. Transitioning To a Hybrid Economy

		20th Century Traditional Economy	Today's Hybrid Economy *21st Century* Digital Economy
Technology Revolutions		Military Technology Revolution (MTR)	Network Technology Revolution (NTR)
		Information Technology Revolution (ITR)	Energy Technology Revolution (ETR)
Economic & Business Drivers	Resources	Industry Emphasis	E-Commerce Emphasis
		Human	Human-Machine-Intelligent Agents
	Connectivity	Stationary Analog	Mobile Digital
		Human-to-Human	Human/Machine-to-Machine
	Energy	Centralized	Point of Use
		Fossil Fuels	Renewables
Labor Force		Large Corporations	Micro Businesses
		Full-Time Workers	Contingent Workers

The U.S. economy is transitioning from a traditional W-2 economy with standard employees to a digital 1099 economy with non-employee contingent workers. From a corporate standpoint, non-employees (contingent workers) make a lot of sense. Outsourcing work to a task-oriented and temporary workforce can provide corporate managers more flexibility and higher profitability than maintaining higher-priced, full-time employees. Contingent workers are also a solution to corporations that are struggling to attract talented workers. Critical skillsets can often be obtained by independent contractors, flex-workers, freelancers and on-demand labor.

According to Ardent Partners, a U.S. research consultancy, "95% of organizations today perceive their contingent workforce as important and vital today not only to day-to-day operations, but also to ultimate enterprise success and growth." In 2015, Ardent calculates that 54% of corporate top talent is concentrated on traditional workers, 20% on contingent workers, and the remaining balance (26%) a combination of traditional and contingent workers. By 2017, this concentration is expected to be 41% traditional, 25% contingent and 34% combined.[137]

Unfortunately, corporate America does not have a common contingent workforce management framework. The same is true with government agencies at both the federal and state level. In order to build a stronger U.S. labor force, leading corporate executives and government officials need to develop a strategic contingent workforce plan that will minimize exploitive hiring and contracting practices of non-employees as well as giving rise to contingency-oriented businesses that provide livable incomes to their constituencies.

[137] Ardent Partners, The State of Contingent Workforce Management 2015-2016, http://ardentpartners.com/CWM15/ArdentPartners-TheStateofCWM2015.pdf

(3) Revolution in energy and network technologies. Today, the U.S. economy can be characterized as a hybrid economy that was formed largely by previous technology revolutions (the post-WWII Military Technology Revolution and the 1980s/1990s Information Technology Revolution) and is being transformed by two emerging technology revolutions (Energy Technology Revolution [ETR] and the Network Technology Revolution [NTR]).

The ETR and NTR have the potential to create millions of small and self-employed businesses and tens of millions of net new U.S. jobs. A substantial percentage of these new jobs will be high-end contingency work provided by a contingent workforce oriented professional services firms, consultancies, independent contractors and self-employed businesses.

The ETR and NTR will be both innovative and disruptive. Innovative technology produces new and more efficient products and services that *create* new jobs, businesses, markets and industries. Disruptive technology produces new and more efficient products and services that *displace* existing jobs, businesses, markets and industries. If properly planned and executed, the churn created by the ETR and NTR can provide significant benefit to the U.S. labor force and economy. Unfortunately, the United States does not have a strategic vision for either of these revolutions.

Energy Technology Revolution (ETR) [138] involves emerging energy technologies, systems, processes and services that will transform the global energy mix and create hundreds of millions of new jobs around the world.

The Energy Technology Revolution (ETR)

The ETR Is A Perfect Storm of Energy Technologies, Processes and Systems Including:
Renewable Energy Sources (Biomass/Biofuels/Wood, Hydroelectric & Hydrokinetic, Wind, Solar, Geothermal, Municipal Waste), Alternative Fuels, Advanced Batteries, Advanced Vehicles (Electric Vehicles, Fuel Cells, Hydrogen Vehicles), Nuclear (Small Modular Reactors, Fusion Reactors), Coal, Conventional and Unconventional Oil & Gas (Petroleum & Other Fluids, Natural Gas, LNG & GTL, Methane Hydrates), Exotics and Yet Unknown Technologies as well as new energy services including Energy Efficiency. Energy Conservation, Energy-as-a-Service (EaaS), Energy Assurance and Security and Energy Disaster Preparedness and Recovery Services.

The ETR Will Revolutionize Labor Forces, Economies And Nations Via The:
Renewable energy sources, micro-grids, net-zero communities, advanced vehicles, alternative fuels, energy storage devices and smart networks will allow energy generation to occur closer to the consumer. Generating power close to the point-of-consumption eliminates cost, complexity, interdependencies and inefficiencies associated with transmission and distribution over 3 million miles of power lines in America.

The ETR Will Be Brilliantly Innovative And Creatively Disruptive:
Creating tens of millions of net new U.S. jobs and businesses.

[138] Jobenomics Energy Technology Revolution Report, http://jobenomicsblog.com/energy-technology-revolution/

Countries that have a national ETR strategy will claim the bulk of these jobs. Future U.S. energy employment growth will be determined by the degree of foreward planning and investment, new businesses creation, recapitalization of retrofitting/replacing old equipment and exportation of American energy-related goods and services. Replacing and retrofitting retiring power generation and transportation systems with newer, cost-efficient and cleaner systems will also produce a new generation of high-tech workers for a workforce that is likely to be dominated by contingent labor.

Jobenomics estimates the size of the U.S. energy super-sector to be approximately 12 million employees, not including another 4 million automotive industry direct employees. If properly managed, this super-sector's future is so bright that it is conceivable that the U.S. could double these numbers within the foreseeable future by (1) exporting energy, technology, systems, processes and services, and (2) moving from a centralized supply-driven architecture to a more decentralized demand-driven architecture that generates power at the point-of-consumption, whether it is a residence, a vehicle or a portable device.

Driven by growing global energy demand (that is forecast to grow 33% by 2030), climate change, renewable energy, cleaner fossil fuels and energy efficiency, the appetite for clean and affordable energy has never been higher. Climate change is a catalyst for nations, businesses and citizens to adopt new ETR technologies, systems, processes and services that will create a better, cleaner and cheaper energy ecosystem. Renewable energy sources, including **solar**, **wind**, **biofuels**, **hydroelectric**, **hydrokinetic**, **geothermal**, **municipal waste** and **biomass**, are already producing millions of new American jobs. Cleaner fossil fuels will play a major role in job creation in conventional and unconventional **oil and gas** production. U.S. **coal**, considered a dirty fossil fuel, has a strong upside potential with exports, and clean coal and coal gasification technologies. **Methane hydrates**, **liquefied natural gas** and **gas-to-liquid** production could also create millions of new jobs. The United States is also on the verge of major nuclear technology breakthroughs including **fusion**, **small modular** and **thorium nuclear** reactors.

The economic, business and employment potential in transportation is also huge considering revolutionary technologies in **alternative fuels**, **advanced vehicles**, **advanced batteries** and exciting new systems, such as **fuel cells**. In the alternative fuels industry, a dozen technologies show promise including biodiesel, electric, propane, natural gas, hydrogen, ethanol, biobutanol, drop-in biofuels, methanol, P-Series fuels, renewable natural gas, and Fischer-Tropsch xTL fuels. A wide variety of advanced vehicles (biodiesel vehicles, hybrid electric vehicles, plug-in hybrid electric vehicles, all-electric vehicles, flexible fuel vehicles, natural gas vehicles, propane vehicles, and fuel cell electric vehicles) are changing the global automotive and transportation landscape. Every advanced economy has a national advanced battery program. Advanced batteries and fuel cells will boost national economies, perhaps rivaling the economic impact of the personal computer. Jobenomics expects that lithium batteries (lithium-sulfur, lithium-ion, and lithium-ferrophosphate) will deliver the most viable near-term storage systems in both the transportation and electric power generation sectors. Global revenue for fuel cells (proton exchange membrane fuel cells, direct methanol fuel cells, phosphoric acid fuel cells, molten carbonate fuel cells, alkaline fuel cells and solid oxide fuel cells) is projected to grow from $2 billion today to $40 billion in 2022.

Worldwide, the automotive manufacturing industry supports over 50 million jobs. Approximately 10 million are direct manufacturing employees and 40 million are indirect or induced jobs. If vehicle manufacturing were a country, it would be the sixth largest economy in the world.

The ETR is likely to change energy scarcity to energy abundance. No one saw the renaissance in the natural gas industry a decade ago due to the combination of horizontal drilling and hydraulic fracturing (fracking). Fracking is unlocking hydrocarbons buried deep underground in the continental U.S. and soon will do so around the world. A decade from now, hydrogen could replace gasoline, and renewables could replace coal. Equally possible, coal would be cooked rather than burned to produce clean methane and net-zero buildings could be energy self-sufficient. Gasification technology is unleashing clean-burning synthetic gases from garbage, human and animal waste and biomass. Energy efficiency has moved from the "hidden fuel" to the "first fuel", exceeding output from any other fuel source. The vast majority of jobs created by these technologies will involve the contingent workers by a substantial margin over standard jobs.

The energy service-providing industry is one of the fastest growing, and least understood, American industries. Energy services include **energy efficiency**, **energy conservation**, **energy security and assurance**, **energy-as-a-service** (managing large and complex energy assets in an interactive, integrated and seamless way) and **energy disaster preparedness and recovery**. The energy efficiency sector alone could create 1.3 million new U.S. jobs by 2030 and saving U.S. consumers $1.2 trillion by 2020. Energy service companies, called ESCOs, specialize in monetizing gains in energy efficiency. U.S. ESCO industry revenues grew from $2 billion in 2000, to $6 billion in 2013 and are projected to be as high as $15 billion by 2020.[139]

Exotic technologies, such as **hydrogen**, energy harvesting, spray-on solar cells, cold fusion and vortex technologies are in development—each of which could have a significant impact on the U.S. economy and labor force. The impact of a hydrogen economy would be dramatic. According to a DoE report to Congress[140], under a rapid transformation scenario, hydrogen would completely replace new light-duty vehicle sales, replace 11 million barrels/day of oil by 2040, and provide 10% of U.S. electrical consumption by 2050. According to the same report, 675,000 net new direct jobs could be created with manufacturing hydrogen fuel cells, fuel cell maintenance and support systems, and hydrogen production from fossil fuels like coal and natural gas. Net employment in the automotive industry would remain unchanged between the gasoline and hydrogen economies, but replacement of gasoline-related skills with hydrogen-related skills would be substantial in the dealership and repair industries.

Renewable energy sources, **micro-grids**, **net-zero communities**, advanced vehicles, alternative fuels, **energy storage** devices and **smart networks** will allow energy generation to occur closer to the consumer and create millions of microbusinesses for the contingency workforce. Generating power

[139] DoE, Berkeley Lab, September 2013, http://emp.lbl.gov/sites/all/files/lbnl-6300e-ppt.pdf
[140] DoE Hydrogen Program, Effects of a Transition to a Hydrogen Economy on Employment in the United States, Report to Congress, Page 6, July 2008, http://www.hydrogen.energy.gov/pdfs/epact1820_employment_study.pdf

close to the point-of-consumption eliminates cost, complexity, interdependencies and inefficiencies associated with transmission and distribution over 3 million miles of power lines in America. Like distributed computing (i.e., PCs) and distributed telephony (i.e., mobile phones), distributed generation shifts control to the consumer. It is also likely that on-site power generation will create an order of magnitude more businesses and jobs, much in the same way the PCs and smartphones and personal digital assistants currently provide.

Net-zero communities, buildings and homes could significantly reduce the $2.0 trillion needed by 2030 to modernize and protect the aging and highly-vulnerable U.S. electrical grid that loses as much electrical energy as it delivers. By shifting energy generation from centralized to decentralized, point-of-use systems, the ETR will not only be more efficient but has the potential to create a massive number of local jobs and small businesses.

While the U.S. is in the forefront in the emerging ETR, America lacks an overall strategy from a business and job creation perspective. A combination of renewable, cleaner fossil fuels, nuclear, transportation, storage, energy efficiency and energy security advancements are needed as outlined in the Jobenomics ETR plan. In the view of many energy experts, the Jobenomics ETR plan is unique since it is a synergistic development plan that focuses on emerging energy technologies, systems, processes and services across the entire energy ecosystem from a business and job creation perspective. As the unconventional oil and gas and renewable energy industries have proven, contingent workers and independent contractors are ideally suited for the ETR.

The Network Technology Revolution (NTR) [141] is defined by Jobenomics as the "perfect storm" of next-generation network and digital technologies that will (1) transform economies, (2) revamp existing institutions, businesses, labor forces and governments, (3) institute new and different ideas, beliefs, behaviors and cultures, and (4) change the very nature of human endeavor and work.

The nascent NTR already has been brilliantly innovative and creatively disruptive. The more creative the NTR becomes the more destructive it will be. From an American outlook, with the proper focus and leadership, the NTR can create millions of new U.S. small business and tens of millions of jobs. Left unattended, unstructured and unplanned, the NTR is likely to render half of the U.S. workforce obsolete in the near future. From a global perspective, the NTR can be even more transformational.

From an NTR perspective, Jobenomics sees three major U.S. labor force trends occurring today that will have a dramatic effect on America's future economy and employment, (1) more than any other labor force trend, the NTR will create significantly more employment opportunities for the contingent workforce than the traditional workforce, (2) new workforce entrants and NTR-savvy digital natives have a substantial different view regarding the way business is currently conducted and their roles in business, and (3) those who cannot adapt will likely depart the U.S. labor force to the growing netherworld of perpetual familial and government assistance.

[141] Jobenomics Network Technology Revolution Report, http://jobenomicsblog.com/network-technology-revolution/

The power of the NTR should not be underestimated or understated. What took centuries to transform in the Agricultural Age and decades in the Industrial Age, now takes years to transform in the emerging Digital Age. Computing power increased 400,000 fold since the advent of the first microprocessor in 1971. Today, half of the world's population carries a smartphone with the power of a 1980s room-size supercomputer. This super-colossal, miniaturized, proliferated and customized power is poised to transform society exponentially more via a perfect storm of over three dozen emerging, revolutionary NTR technologies, systems, processes and services.

Even in today's fledgling stage of development, the NTR's impact is extraordinary. At maturity, the NTR's future impact is likely to be somewhere between phenomenal and cataclysmic. Some of the world's leading technical thinkers (Steven Hawking, Bill Gates, Elon Musk) believe that the perfect storm of NTR technologies, systems, processes and services can potentially pose an "existential threat" to mankind when machines achieve the level of general human intelligence—the point of "singularity"—which could arrive as early as mid-Century.

The Network Technology Revolution (NTR)

Source: Jobenomics

The NTR is defined by Jobenomics as a perfect storm of transformative network and digital technologies, processes, systems and services including:

Big Data, Cloud Computing, Semantic Webs, Synthetic Reality, Mobile Computing, Ubiquitous Computing, Quantum Computing, 5G Broadband, Geo-Location, Near-Field Communications and Beacons, Inductive Charging, Spatial Sensing, Computer Vision and Pattern Recognition, Natural Language Processing and Speech Recognition, Data Mining and Predictive Analysis, Machine Learning, Transfer Learning, Deep Learning, Robotics, Telepresence and Telechirs, Nanobotics, Chatbots, Mechatronics, Memetics, Biometrics, Smart Cards, Blockchains, FinTech, Multifactor Credentialing, Emotive Surveillance and Management, Identity Management, Anonymity Networks, Ambient Intelligence, Artificial Intelligence and Intelligent Agents.

The NTR will revolutionize labor forces, economies and nations via the:

Digital Economy and its seven distinct but interconnected communities:
(1) Electronic/Mobile Commerce Economy, (2) Sharing/On Demand Economy, (3) Apps/Bot/AI Economy, (4) Platform Economy, (5) Gig/Contingent Workforce Economy, (6) Data-Driven Economy and (7) Internet of Everything Economy.

The NTR will be brilliantly innovative and creatively disruptive:

Creating tens of millions of new businesses and billions of jobs globally, and/or
Destroying tens of millions of new businesses and billions of jobs globally.

The NTR will ultimately transform society with humanity working alongside smart machines, sophisticated robots and intelligent agents:

Revamping existing institutions and governments,
Instituting new and different ideas, beliefs, behaviors and cultures, and
Changing the very nature of human endeavor and work.

NTR's "Perfect Storm". Industrial Revolution (IR) transformed America from an agricultural-based society to an industrial-based society. WWII and post-WWII Military Technology Revolution (MTR) underpinned the creation of the largest economic superpower on the planet. The 1980/90s Information Technology Revolution (ITR) ushered in an information age of prosperity and international commerce. Today, the Network Technology Revolution (NTR) is reshaping the global economy. Like the IR, MTR and ITR, the NTR could lead to the creation of millions of U.S. businesses and tens of millions of new American jobs, as well as countless economic and social benefits. Globally, the NTR's potential is exponentially greater in terms of business, employment and societal transformation.

The NTR is characterized by a "perfect storm" of highly advanced technologies, systems, processes and services including **big data** (datasets that are too large to efficiently handle), **cloud computing** (practice of using a network of remote servers hosted in data centers to store, manage, and process big data), **semantic webs** (thinking websites), **synthetic reality** (blending of the virtual and natural worlds), **mobile computing** (proliferation of smart mobile devices and micro-devices), **ubiquitous computing** (embedding microprocessors in everyday objects to communicate without human interaction), **quantum computing** (harnessing the power of atoms and molecules to perform memory and processing tasks), **5G broadband networks** (50-fold speed increases and 1000-fold data volume improvements), **geo-location** (the process of determining the location of an entity by means of digital information processed via the Internet), **near-field communications** and **beacons** (short-range wireless technology that connects devices), **inductive charging** (electromagnetic wireless charging of devices, micro-devices and nano-devices), **spatial sensing** (real-time detection, measuring, mapping and analysis of objects in relationship to the environment), **computer vision** and **pattern recognition** (training computers to gain high levels of understanding from digital images and videos and recognizing patterns and regularities in the data), **natural language processing** and **speech recognition** (the ability of a computer program, machine or intelligent agent to understand and respond to human speech), **data mining** and **predictive analysis** (using advanced algorithms to analyze large databases to make predictions about unknown future events), **machine learning** (systems that can learn and teach each other), **transfer learning** (machine "reasoning" that takes lessons learned from past human experiences and applies it digital domains), **deep learning** (an artificial intelligence technique allowing machines to extract patterns from big data in the same manner that the human brain does), **robotics** (automated machines capable of movement), **telepresence** and **telechirs** (operating machines remotely to sense and create an effect or control), **nanobotics** (also called nanomachines, nanoids, nanites and nanomites are microscopic self-propelled machines with a degree of autonomy and reproductive capability at the molecular level), **chatbots** (web robots that run automated tasks or simulate conversations with users), **mechatronics** (technology combining electronics and mechanical engineering), **memetics** (machines that can create memes to mimic cultural traits and ideas), **biometrics** (agents that can identify and track biological traits), **smart cards** (credit card-like devices that can send and store personal and identifying material), **blockchains** (distributed digital economy public ledgers), **fintech** (financial technology oriented to transforming incumbent financial institutions and corporations), **multifactor credentialing** (automated authentication and identification of crowds, individuals and intelligent agents), **emotive surveillance** and **management** (systems that analyze and manage emotions), **identity management** (controlling user access and restoring damaged online identities), **anonymity**

networks (networks that enable users to block or trace data and identities), **ambient intelligence** (when formerly dumb or mute objects are given the ability to communicate), **artificial intelligence** (or AI, intelligent algorithms and agents that will augment human interactions), and **intelligence agents** (AI agents that replace or supersede the need for human intervention and actions).

The NTR will revolutionize labor forces, economies and nations via the emerging digital economy. The **Digital Economy** is an economy that is based on digital and networked technologies, which is increasingly intertwining and preempting today's traditional economy. The **E/M Economy** consists of electronic and mobile commerce that is transforming economies, government, business and society via network and digital technology, systems, processes and services. The **Sharing/On-Demand Economy**, is a new wave of peer-to-peer, access-driven businesses that are characterized by the ability of individuals to rent or borrow goods rather than buy and own them or to quickly fulfill consumer demand via the immediate provisioning of goods and services. The **App/Bot/AI Economy** refers to the range of economic activity surrounding intelligent web-based applications. Apps (applications) are the digital interface through which we live, work and play and the primary way we engage with media, brands and ultimately with each other. A bot, also known as a web robot, an internet chatbot or simply bot, is an interactive, artificial intelligence-driven software application that runs automated tasks or simulates a conversation to deliver text-, voice- or video-based information to a user via a networked device. Artificial intelligence (AI) is the intelligence exhibited by machines or software that is able to do things normally done by people. The **Platform Economy** encompasses NTR-enabled social, business and government activities. A **Gig/Contingent Workforce Economy** is an environment in which temporary positions are common and organizations contract with independent workers for short-term engagements. A **Data-Driven Economy** involves accessing and exploiting information and knowledge contained in big-data pools to maximize operational efficiencies and reduce costs. The **Internet of Everything Economy** brings together people, process, data, and things to make networked connections more relevant and valuable than ever before—turning information into actions that create new capabilities, richer experiences, and unprecedented economic opportunity for nations, businesses and individuals.

The NTR will create or dismantle tens of millions of businesses and billions of jobs globally. Countries with a forward-looking national NTR strategy will garnish the bulk of the newly emerging digital jobs and businesses. There are 176 transformative NTR platform companies worldwide, each with a market valuation of over $1 billion, worth a total of $4.3 trillion.[142] China and the United States dominate with 64 and 63 major platform companies respectfully. U.S. platform companies are foundational in terms of innovation and transformation. U.S. foundational platform companies created the innovative and disruptive digital platforms on top of which other firms develop complementary technologies, systems, processes and services.

To a large extent, China's platform companies are built on U.S. foundational platforms. However, unlike their U.S. counterparts, China's platform companies are applying NTR-related technology, systems, processes and services within a government-backed strategic framework to mass-produce

[142] The Center for Global Enterprise, The Rise of the Platform Enterprise: A Global Survey, January 2016, http://thecge.net/wp-content/uploads/2016/01/PDF-WEB-Platform-Survey_01_12.pdf

small businesses and jobs in order to raise 700 million Chinese rural poor out of poverty. To a lesser extent, these types of strategies are being promulgated in many other parts of the world. From a Jobenomics perspective, U.S. policy-makers and platform-CEOs need to concentrate America's exceptional NTR abilities on developing a state-of-the-art, network-centric ecosystem that will enable Americans to become self-sufficient and competitive in the emerging global digital economy.

America is blessed to be the home of NTR platform giants like Apple, HP, Facebook, Google, CISCO, Amazon, Microsoft, eBay and dozens of other NTR companies. While U.S. NTR giants are making great technical advancements in communication, media and entertainment, foreign countries in Asia and Europe are using U.S. technology to develop their labor forces and economies to a much greater degree than in the United States. As corporate citizens, U.S. NTR companies need to assume a much greater role in developing their domestic workforce that is capable of competing and prospering in the emerging global digital economy. From a Jobenomics perspective, NTR CEOs should take the lead (i.e., the responsibility) for creating a minimum of 10 million net new U.S. jobs within the next decade via the creation of network-centric small, micro and self-employed American businesses.

If Tim Cook turned Apple's creative energy to creating NTR-optimized e-business devices, tens of millions of more Americans (and billions of people around the world) could be given the opportunity to build a business. If Mark Zuckerberg used Facebook to monetize social networks, tens of millions of new careers could be created. If CISCO's Chuck Robbins will spend a small portion of time and effort developing the Internet of Business as compared to the Internet of Things, millions of new businesses could be created. The same is true of Jeff Bezos and Amazon, Satya Nadella and Microsoft, Sundar Pichai and Google, Ginni Rometty and IBM, as well as the rest of the American NTR CEOs. Together, these companies could create untold numbers of new U.S. jobs and microbusinesses that would mitigate the erosion of the middle-class, provide new career paths for the digital generation, and create meaningful income opportunities and livelihoods for the evergrowing contingent workforce.

With the proper focus and leadership, an American NTR national initiative can create millions of new small businesses and tens of millions of jobs. Left unattended, unstructured and unplanned, the NTR is likely to render half of the U.S. workforce obsolete in the near future. The NTR could produce tens of millions of net new U.S. jobs and millions of small businesses. On the other hand, via automation, the NTR has the potential to obsolete tens of millions of existing jobs. A national NTR strategy is needed to maximize labor force gains and minimize labor force losses.

(4) Impact of the emerging digital economy. As discussed in the previous section, the Digital Economy has seven distinct but interconnected communities: (1) Electronic/Mobile Commerce Economy, (2) Sharing/On Demand Economy, (3) Apps/Bot/AI Economy, (4) Platform Economy, (5) Gig/Contingent Workforce Economy, (6) Data-Driven Economy, and (7) Internet of Everything Economy. Today, (1) the Electronic/Mobile Commerce Economy is the community that is most recognized and understood. (5) Gig/Contingent Workforce Economy is almost invisible to the American public and the least understood. By 2030, most of today's economic and technical experts look to the (7) Internet of Everything Economy as the force majeure. Jobenomics disagrees. Given current trends and stockpiles of cash, the (4) Platform Economy is likely to dominate the global economic landscape with hegemonic power afforded to interlocking mega-platform conglomerates.

Predicting the digital economy at this early stage is merely a guessing game. The only reality known today is that the economy is in a massive state of transition due the combined effects of the emerging NTR and the digital economy.

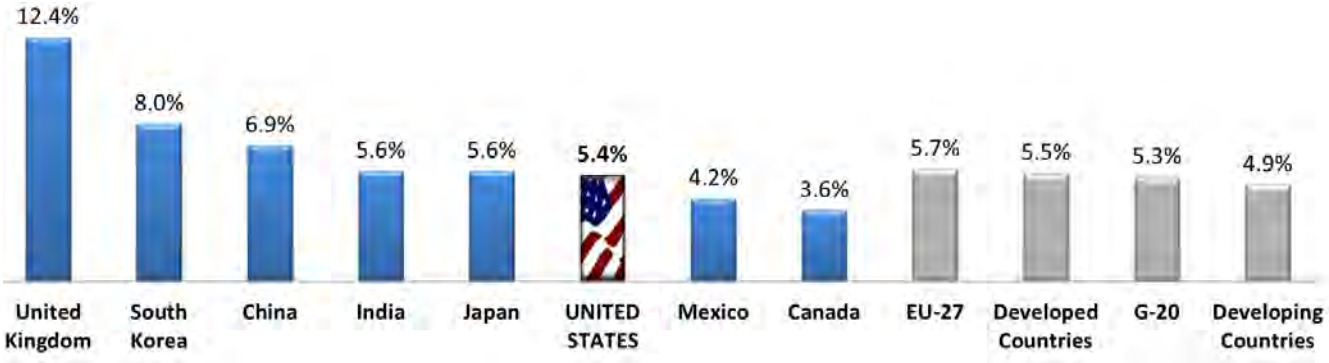
Digital Economy Dynamics. A digital economy conducts transactions via digital networks that connect workers, customers, businesses and governments. A digital economy is often characterized by a much greater percentage of professional, self-directed, entrepreneurial, contingent workforce owners and employees. Digital economy work can be full-time or part-time, and may be the primary source of income or a supplemental source.

The digital economy provides a global network that allows individuals, organizations and governments to access information, interact, communicate, collaborate, and provide products and services. Digital products and services include a vast repository of digitized products (news, video, music, data, information, knowledge, etc.), financial transactions (e-government, e-business and e-commerce), social networking (Facebook, Twitter, Instagram, etc.), and networked physical goods (e.g., Internet of Things).

The digital economy consists of various components including: government (policy and regulation), infrastructure (internet, networks, telecom and electricity), providers (digital service, content, information and knowledge workers), technology (R&D, processes and systems) and e-commerce (business-to-business, business-to-consumer, consumer-to-consumer and government to business/consumer). To achieve maximum productivity, these components must operate efficiently and collectively.

GDP Share of the Digital Economy in 2016

Source: OECD, BDG, Statista



Today, the U.S. economy is a hybrid economy that is approximately 95% traditional and 5% digital as a percent of GDP.[143] However, the U.S. digital economy is growing at 20% per year and is likely to be the dominant economy by mid-century based on a number of governmental, economic, technological and societal factors that can be managed but not controlled. As shown, global competition for digital economic dominance has already begun and, by many accounts, the United States is not competing

[143] Statista, Share of the internet economy in the gross domestic product in G-20 countries in 2016, http://www.statista.com/statistics/250703/forecast-of-internet-economy-as-percentage-of-gdp-in-g-20-countries/

as well as one would expect given the U.S. dominance in enabling NTR research, development, technologies, systems, processes and services.

According to eMarketer, a research firm, worldwide retail products and services sold on the internet will account for 8.6% of the total retail market worldwide for a value of approximately $2 trillion. By 2019, retail e-commerce is projected to increase to 12.8% for a value of $3.6 trillion. The average growth per year ranges from 18.7% to 22.7% growth.

Differences between the Old and New Economies

	Traditional Economy Orientation	Digital Economy Orientation
Technology	Analog	Digital
	Industrial	Informational
	Tangible	Conceptual
	Labor-Intensive	Knowledge-Intensive
Business	Corporate	Individual
	Long Timelines	Short Timelines
	Mass-Produced	Custom-Made
	Relationship-Focused	Task-Focused
Governance	Centralized	Decentralized
	Ordered/Structured	Collaborative/Freewheeling
	Hierarchical	Flat
	Fiat Currencies	Digital Currencies

A digital economy's orientation is significantly different than the traditional economy in terms of technology, business and governance.

From a **technology** perspective, today's traditional economy has an industrial/analog/physical/product-based orientation as opposed to tomorrow's digital economy's informational/digital/virtual/knowledge-based orientation.

From a **business** perspective, in today's traditional business economy, corporations are oriented to maintaining corporate cultures, long timelines, mass production and relationship-focused transactions and leadership. Emerging digital businesses will be more oriented towards individuals, shorter timelines, customized services and products and task-focused transactions and leadership.

From a **governance** perspective, in today's traditional economy, governance is oriented to meeting goals defined by performance standards defined by corporate leaders and accomplished by hierarchical, structured and stratified teams. In a digital economy, governance is oriented to tasked-focused managers of dispersed and networked teams and individuals collaboratively working on defined tasks with shorter-timelines and less cognizance of goals other than accomplishing the task at hand.

As more and more NTR technologies, systems, processes and services are incorporated, the difference between the old and new economy will become more profound. Cloud computing

provides a good example of how a single NTR technology can quickly transform traditional organizations into digital organizations.

In less than a decade, the cloud has gone from a distant vision to the business mainstream. One-third of 200 surveyed senior traditional corporate executives said that cloud computing has a "transformative impact" on their business.[144] According to an Oxford Economics survey, a key benefit to cloud computing is the flexibility to start new businesses and close down old businesses. Over the next three years, the majority of these 200 corporate executives plan to make "moderate-to-heavy" cloud investments and increase migration of core traditional business functions into the cloud.

If a single NTR technology can create such big impact, one can only imagine the impact of incorporating three dozen other NTR technologies that will transform traditional businesses into hybrid e-businesses. Also imagine the transformative impact that e-commerce will have on small businesses and contingent workers, and the impact that e-government will have on enhancing bureaucratic efficiency and transparency.

The emerging digital economy will favor contingent work over full-time work. As traditional corporations embrace the digital revolution, the full-time workforce is likely to shrink to a fraction of its current size as corporations outsource greater amounts of full-time work to full-time equivalent (FTE) work to the contingent workforce.

Network-centric corporations are already exhibiting this trend. For example, Google (Alphabet Inc. Class A) has a market capitalization of $555 billion with 61,000 full-time workers compared to General Electric's market cap of $274 billion with 333,000 full-time workers. While General Electric has over five times as many indirect workers as Google, Google has enabled millions of contingent workers and contingent businesses that are engaged in global e-commerce and other NTR-related occupations. Another good example is a General Motors/Uber comparison. GM is worth about $50 billion with 212,000 employees. Uber's estimated worth is $98 billion with 6,700 full-time employees and an estimated 1,000,000 contingent workers (mainly drivers) worldwide with approximately half the number in the United States.

(5) Automation of the labor force. While the NTR can create tens of millions of American jobs, it can also obsolete tens of millions of American jobs. As more and more routine manual and cognitive jobs are displaced, the contingent workforce is likely to expand proportionally. Automation will slowly supplant cognitive work task by task giving rise to "centaurs" (a combination of human operators, and intelligent agents and smart machines). Smart machines (that communicate with humans) and intelligence agents (that learn human behavior) are entering the cognitive workforce at a greater and greater rate. Today, these automated machines/agents need human support to perform most tasks. However, they can perform enough complex tasks to reduce the need for full-time human labor,

[144] Oxford Economics, The Cloud Grows Up, February 2015, http://www.sap.com/bin/sapcom/en_us/downloadasset.2015-02-feb-25-23.the-cloud-grows-up-oxford-economics-and-sap-pdf.bypassReg.html

thereby giving rise to centaurs where contingent human workers will provide input as needed or warranted.

The NTR is not today's version of the 1980/90s Information Technology Revolution (ITR) 2.0. While both the ITR and NTR incorporate revolutionary technology, the NTR portends to be significantly more intrusive than its earlier and more benign ITR cousin. ITR tools were designed to **assist** mankind's productivity via rule-based computation of routine-tasks. NTR agents are designed not only to augment, but also **replace** human endeavor via automation of non-routine tasks. As stated earlier, the NTR represents a perfect storm of technologies that emulates human form, attributes and intelligence. Not only does the NTR have the ability to create tens of millions of net new American jobs, it has the ability to eliminate tens of millions of American jobs via automation.

As skilled labor becomes less available or too costly, employers are turning to automation in order to augment, displace or replace the traditional workforce. While automation has been replacing routine manual labor tasks for decades, as evidenced by factory floor robotics, emerging NTR technologies, systems, processes and services are replacing non-routine cognitive tasks, skills, jobs and occupations at greater and greater rates.

By 2025, automated algorithms and smart machines could take on tasks equivalent to 140 million knowledge workers, equating to a global economic impact/savings of up to $6.7 trillion annually. Knowledge work automation is possible by only three of the three dozen NTR technologies: increased computer processing speeds and memory, machine learning and enhanced machine/human interfaces (such as speech recognition and other forms of biometric readers).[145]

U.S. Occupations Subject To Computerization

Source: Oxford University, The Future of Employment: How Susceptible Are Jobs To Computerization?

0% = not computerizable, 100% = fully computerizable

Probability of Computerization	Sample U.S. Occupations (from 702 Occupations)
0% to 9%	Executives, supervisors, doctors, therapists, scientists, engineers, designers, lawyers, clergy, teachers, instructors, trainers, advisors, social workers
10% to 20%	Chefs/cooks, chemists, technicians, hairdressers, air traffic controllers, pilots, firefighters, electricians, physician assistants
20% to 29%	Middle managers, computer occupations, analysts, concierges, engineering technicians, sales representatives, middle school teachers
30% to 39%	Actors, medical assistants, investigators, editors, flight attendants, bailiffs, surveyors, interpreters/translators, upholsterers, plumbers
40% to 49%	Judges, health and medical technicians, law clerks, electronic repairers, economists, historians, computer programmers, dispatchers

[145] McKinsey Global Institute, Disruptive Technologies: Advances that will transform life, business, and the global economy, Page 40, May 2013, https://www.sommetinter.coop/sites/default/files/etude/files/report_mckinsey_technology_0.pdf

50% to 59%	Court reporters, product promoters, leather workers, commercial pilots, teacher assistants, cost estimators, transit police, personal financial advisors
60% to 69%	Jailers, meat packers, ticket agents, pipe layers, building inspectors, stock clerks, librarians, janitors, bus drivers, mail carriers, dental hygienists
70% to 79%	Airfield operators, laundry workers, carpenters, broadcast technicians, archivists, painters, bartenders, machine & computer operators
80% to 89%	Attendants, bellhops, cashiers, tool makers, security guards, meter readers, power plant operators, drillers, conservation workers, real estate agents, construction laborers, cartographers, bakers, stonemasons, technical writers
90% to 100%	Inspectors, appraisers, bookies, tour guides, station operators, pharmacy technicians, insurance sales agents, retail sales, butchers, accountants, auditors, waiters, welders, messengers, paralegals, assemblers, clerks, receptionists, gaming dealers, cashiers, real estate brokers, tellers, umpires/referees, loan officers, tax preparers, underwriters, telemarketers

According to a 2013 Oxford University study on computer automation "about 47% of total U.S. employment is at risk over the next two decades".[146] If Oxford's estimates are correct, out of the 151 million U.S. workers, 71 million jobs could be at risk. It is incumbent on policy-makers, decision-leaders and NTR CEOs to plan now to mitigate this risk to the greatest degree possible.

The Oxford University study regarding the effects of computer automation on the American labor force is the first major effort to quantify what recent technological advances may mean for future employment and the labor force. Oxford analyzed 702 occupations from the U.S. Department of Labor. This Jobenomics chart above, derived from Oxford data, shows the probability of computerization of 100 occupations arranged from 0% (not computerizable) to 100% (fully computerizable).

A job is considered to be "exposed to automation" or "automatable" if the tasks it entails allows the work to be performed by a computer, even if a job is not actually automated. For example, technology has progressed to the point where secretarial and cashier jobs can be automated, but corporations and retail stores still employ approximately 6 million administrative assistants and cashiers in the United States.

The NTR's impact will be felt across all industries that will become less labor intensive as NTR technologies, systems, processes and services are assimilated, which is happening at greater rates causing large swaths of the U.S. labor force to become less competitive against their mechanical and digital counterparts. A McKinsey Global Institute (MGI) report that showed the 44% of U.S. firms that reduced headcount during the Great Recession did so via automation.[147] In the future, contingent workers will likely provide machines with the wherewithal to replace a substantial percentage of the

[146] Oxford University, *The Future of Employment: How Susceptible Are Jobs To Computerization?*, 17 Sep 2013, http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdfhttp://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

[147] McKinsey Global Institute, An economy that works: Job creation and America's future, June 2011, file:///C:/Users/CHUCK/Downloads/MGI_US_job_creation_full_report.pdf

human labor force with cheaper and more efficient mechanical forms of labor. A recent poll on the impact of technology on employment and earnings of leading academic economists conducted by the Chicago Initiative on Global Markets, 43% of the respondents agreed with the statement that "information technology and automation are a central reason why median wages have been stagnant in the US over the past decade, despite rising productivity," whereas, only 28% disagreed or strongly disagreed with the statement.[148]

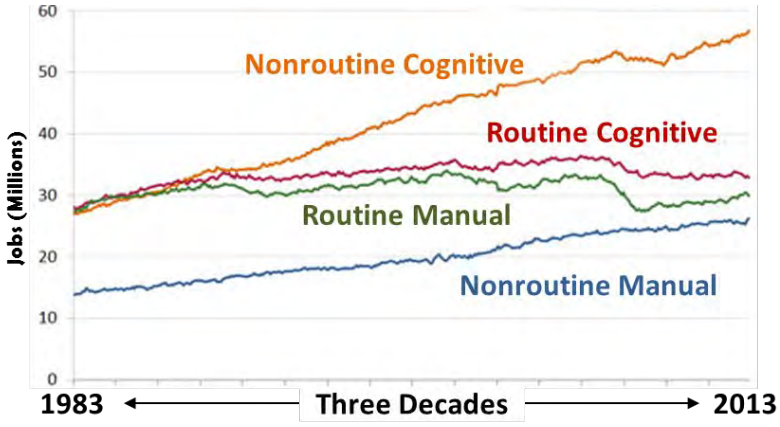
The Oxford study also acknowledges that political and sociological forces will likely restrict many of these jobs from actually being computerized. Historical objections to automation of factory floor manual labor eventually gave way to free-market forces. At the dawn of the Industrial Revolution (England 1811-16), Luddites tried to organize and destroy factory automation to preserve standard jobs. Today's Luddites maybe able to slow the rate of transformation but the economics of automation will eventually defeat techno-pessimists who resist disruptive technologies and change.

In cooperation with Citi Global Perspectives & Solutions, Oxford University conducted two subsequent studies in 2015 and 2016 that addressed computer automation in greater detail. [149&150]

The February 2015 Oxford/Citi study reaffirmed the 2013 study probability that 47% of the US labor force is at a high risk of automation. It also assigned the probability that 33% of U.S. workforce is at a low risk of automation (namely the jobs that are highly creative and require social and cultural skills) and the remaining 20% at a medium risk of automation. As reported by the 2015 study, "the dominant narrative now characterizing how global labor markets are responding to technological change is one of job polarization: the fact that employment growth has been most robust at the highest and lowest ends of the skills spectrum. The middle skill jobs, in contrast, contain the highest concentration of routine tasks and are thus relatively easy to automate."

U.S. Employment by Type of Work

Source: Federal Reserve Bank of St. Louis, Census Bureau Current Population Survey



[148] Polanyi's Paradox and the Shape of Employment Growth, by David, H. Author, MIT, NBER and JPAL, 3 September 2014, Page 5, http://economics.mit.edu/files/9835

[149] Oxford Martin School and Citi Global Perspectives & Solutions, Technology At Work: The Future of Innovation and Employment, February 2015, http://www.oxfordmartin.ox.ac.uk/downloads/reports/Citi_GPS_Technology_Work.pdf

[150] Oxford Martin School and Citi Global Perspectives & Solutions, Technology At Work v2.0: The Future Is Not What It Used to Be, January 2016, http://www.oxfordmartin.ox.ac.uk/downloads/reports/Citi_GPS_Technology_Work_2.pdf

A 2016 report published by the U.S. Federal Reserve Bank of Kansas City, agrees that the U.S. labor force is undergoing "job polarization" with declining middle-skill cognitive and manual routine jobs compared to increasing higher-skill cognitive and manual nonroutine jobs as shown.[151] The Fed believes that the most likely drivers of job polarization are automation and offshoring, as both these forces lower the demand for middle-skill occupations relative to high-skill occupations. Jobenomics includes the rising contingent workforce is also a major factor as standard full-time jobs are giving way to temporary part-time and task-oriented work.

Job polarization is a primary cause for the vanishing American middle-class. Per the Fed's report, "Over the past three decades, the share of middle-skill jobs in the United States has fallen sharply. Middle-skill jobs are those in which workers primarily perform routine tasks that are procedural and repetitive. The decline in the employment share of middle skill jobs has been associated with a number of sweeping changes affecting the economy, including **advancement of technology**, outsourcing of jobs overseas, and contractions that have occurred in manufacturing. As the share of middle-skill jobs has shrunk, the share of high-skill jobs has grown, and that trend has drawn considerable attention. Less well known is the fact that the share of low-skill jobs has also risen. This employment phenomenon where job opportunities have shifted away from middle-skill jobs toward high- and low-skill jobs is called 'job polarization'".[152]

From a Jobenomics perspective, low-skill jobs are the easiest to automate, whereas medium-skilled jobs are the easiest to bifurcate into task-oriented work that can be performed by a combination of humans and machines. While the NTR is creating new positions for high-skilled workers, it is causing increased competition for medium and low-skilled workers who are increasingly being replaced by artificially intelligent algorithms and machines. Increased competition causes workers to accept lower wage jobs or forcing medium and low-skill workers into the contingent workforce or out of the labor force entirely. As discussed in detail in the Jobenomics Unemployment Analysis, the number of able-bodied adults that voluntarily have departed the U.S. labor force has grown from 68 million to 95 million citizens over the last sixteen years, and the number of people working part-time or in other "non-employee" contingent jobs is now 40% of the employed workforce.

The major reason for concern regarding computer automation and other NTR-related technologies is that these advancements benefit the few rather than the many. While NTR has produced remarkable achievements like the iPhone, Google, eBay, Facebook, Skype and a myriad of other advancements in genome and autonomous systems, median wages have stagnated in about half of all OECD countries since 2000. Unlike 19th Century Industrial Revolution innovations that created gains for both producers and workers, the NTR has benefited mainly the producers and is displacing workers via the revolution in network technology. In other words, while the digital age has been a blessing to consumers, it is changing the world of work in ways that may make a growing share of workers worse off.

[151] Federal Reserve Bank of St. Louis, Jobs Involving Routine Tasks Aren't Growing, 4 January 2016, https://www.stlouisfed.org/on-the-economy/2016/january/jobs-involving-routine-tasks-arent-growing

[152] Federal Reserve Bank of Kansas City, The Vanishing Middle: Job Polarization and Workers' Response to the Decline in Middle-Skill Jobs, https://www.kansascityfed.org/publicat/econrev/pdf/13q1tuzemen-willis.pdf

The January 2016 Oxford/Citi study took a deeper dive into the effects of automation not only in the United States but the rest of the world. Building on the Oxford's original work showing 47% of the U.S. workforce at risk, recent data from the World Bank suggests the risks are higher for other countries. Equivalent figures for India are 69% and 77% for China. As compared to the developed world, emerging and developing economies have a much higher rate of low-skilled workers that are more susceptible to automation.

As labor-intensive industries succumb to more automated-intensive industries, middle-income countries like China and India will face a major dilemma inasmuch as more automation will be required to compete internationally. The major downside to these countries is the likelihood that they may have to reverse labor force gains that recently raised hundreds of millions of Asians out of poverty. In addition, many emerging economies with large low and medium-skilled populations are especially vulnerable to the so-called "middle income trap", where a country gets stuck at a level of development out of poverty without the wherewithal to elevate to levels of more advanced economies.

China created its economic miracle via labor-intensive industries that required low and medium-skilled labor. Over the last two decades, China lifted 700 million people out of poverty largely by state-controlled labor-intensive industries in urban areas. Today, China is considered a middle-income country with a per capita income of $7,600, compared to $54,600 for the United States.[153] Over the last five decades only a few countries (Japan, Israel, South Korea and Singapore) have been able to escape the middle-income trap and evolve to the high-income club. NTR automation is likely to make the jump even harder since it advantages smaller high-skilled nations and disadvantages larger low-skilled nations. In terms of manufacturing, computer automation incentivizes companies to move facilities closer to consumers, which could reduce the offshoring trend. 22% of the study respondents believe that North America has most to gain from automation, while 24% believe China has the most to lose.

Within the United States, there is a wide disparity between metropolitan areas in regard to automation. Cities like, Boston, Washington DC, Raleigh, New York, San Francisco are considered low risk, while, Fresno, Las Vegas, Greensboro, Harrisburg and Los Angeles are considered higher risk cities. Generally speaking, diversified, rich, highly-educated cities are least exposed. The cities that are most exposed are older single industry centers replete with poorer and lower skilled workers. Cities with a high concentration in information, communication and network-centric industries are the best prepared to embrace the upsides of NTR automation and the up-skilling that these industries produce for their labor forces. The most promising industries for job creation are in information technology, automotive, robotics, 3D printing, health and medical, which collectively will generate over 50% of all new American jobs. The bulk of these jobs will be in small businesses and microbusinesses, which is the sweet spot for non-core contingency businesses like independent contractor, consultants and high-skill contract labor.

76% of the 2016 Oxford study respondents consider themselves as "techno-optimists" compared to 21% who see themselves as "techno-pessimists". From a Jobenomics perspective, this is an

[153] World Bank, GDP Per Capita, 2011-2015, http://data.worldbank.org/indicator/NY.GDP.PCAP.CD

extremely important statistic. Too often, pundits overstate the extent of machine substitution and ignore the positive aspects of human/machine partnership in terms of increased productivity, earning potential and skilled labor demand.

The introduction of machines to the labor force has not historically hurt the labor force. The machine-smashing Luddites certainly did not foresee the massive labor force expansion caused by the industrial revolution in the 1800s. Agricultural machines displaced tens of millions of farmers and farmhands but created the food services industry. Mass-produced automobiles displaced skilled artisans but led to an explosion in transportation and commerce related industries. Power tools displaced construction workers but made residential and commercial buildings more affordable and the creation of vastly more construction jobs. The Information Technology Revolution (ITR) of the late 20th Century created the information age and the billions of new jobs.

On the other hand, a high percentage of economists believe that while automation has not historically reduced employment, the disruptive power of the NTR makes future artificially intelligent systems vastly superior to their simpleton automated forerunners. Highly intelligent machines and software are likely to displace many more humans than the new jobs they create.

Popular opinion maintains that highly intelligent machines and software will displace mainly low-skilled workers. This opinion is wrongheaded—high-skilled and highly-paid workers are equally vulnerable to displacement. A recent MIT Technology Review article entitled "Goldman Sachs Embraces Automation, Leaving Many Behind" examined the emerging relationship between machines and humans at Goldman Sachs, a leading global securities trading, investment banking and management firm.[154] Since year 2000, Goldman's New York securities trading desk downsized its 600 traders to only 2 people via the miracle of artificial intelligence (machines) and the addition of 200 computer engineers (humans). Globally, Goldman figures that 4 highly-paid ($500,000+/year) traders can be replaced by 1 centaur (combination smart algorithm and a computer engineer). Goldman is now looking beyond its security trading sector to its investment banking sector which deals with corporate mergers, acquisitions, IPOs and investment portfolio management. According to MIT, investment bankers average $700,000 per year. In the IPO arena alone, Goldman "has already mapped 146 distinct steps in any initial public offering of stock, and many are 'begging to be automated'" according Marty Chavez, Goldman Sachs' Chief Financial Officer and former Chief Information Officer. In other words, Goldman is looking to automate processes and tasks in lieu of automating individual positions.

The 2016 Oxford/Citi study calculates that "between 2002 and 2012, 33 legacy jobs were lost for every new digital job that was created." The 2015 Oxford/Citi study cited three primary reasons why the NTR is likely to be different from previous technology revolutions: (1) the pace of change has accelerated; (2) the scope of technological change is increasing; and (3) unlike innovation in the past, the benefits of technological change are not being widely shared — real median wages have fallen

[154] MIT Technology Review, Vol. 120/No. 3, May/June 2017, Goldman Sachs Embraces Automation, Leaving Many Behind.

behind growth in productivity and inequality has increased. [155] With a proper U.S. national strategy, that currently does not exist, the NTR can replace jobs lost to automation via the creation of new small business and career paths. Jobenomics agrees with the 2016 Oxford/Citi report recommendations on the top four policy responses to the risks of automaton impacting labor and wealth distribution are (1) invest in education, (2) encourage entrepreneurship, (3) fund active labor market policies that help people find jobs, and (4) fund research that enables innovation and enhances employment.

In May 2016, OECD researchers (Melanie Arntz, Terry Gregory and Ulrich Zierahn) conducted a comparative analysis of the Oxford 2013 study, which yielded significantly different results regarding the "risks of computerization".[156] Compared to the Oxford study that looked at occupations as a whole, the OECD 2016 study looked at single-job tasks within the occupation. As a result, the OECD researchers concluded that while many of the occupational tasks within an occupation may be automated, the entire occupation may not be subject to automation. Using this approach, the OECD researchers concluded, on average across the 21 OECD countries, only 9% of jobs are automatable. In other words, "occupations labelled as high-risk occupations often still contain a substantial share of tasks that are hard to automate." While Jobenomics concurs, Jobenomics continues to assert that computer automation will lead to large-scale job reductions as entire occupations are reorganized into computer-based-tasking and human-based-tasking. Automation will slowly supplant work task by task giving rise to "centaurs" (a combination of human operators, and intelligent agents and smart machines).

In March 2017, as part of a United Kingdom (U.K.) Economic Outlook assessment regarding the potential impact of automation on the U.K. and other major economies, PWC concluded that the automation threat to the U.K. economy is as significant as the BREXIT threat (the British Exit from the European Union.[157] The PWC analysis refuted the OECD 2016 analysis and suggested "that up to 30% of UK jobs could potentially be at high risk of automation by the early 2030s, lower than the U.S. (38%) or Germany (35%), but higher than Japan (21%). The risks appear highest in sectors such as transportation and storage (56%), manufacturing (46%) and wholesale and retail (44%), but lower in sectors like health and social work (17%)." The PWC also concluded that for high school or lower level individuals the risk of automation in the U.S. is as high as 46%, whereas the risk to people with undergraduate degrees or higher is around 12%.

---

[155] Oxford Martin School and Citi Global Perspectives & Solutions, Technology At Work v2.0: The Future Is Not What It Used to Be, Technology Is Impacting Media Employment, Page 79,January 2016, http://www.oxfordmartin.ox.ac.uk/downloads/reports/Citi_GPS_Technology_Work_2.pdf

[156] OECD, OECD Social, Employment and Migration Working Papers, The Risk of Automation for Jobs in OECD Countries A Comparative Analysis, 14 May 2016, http://www.oecd-ilibrary.org/docserver/download/5jlz9h56dvq7-en.pdf?expires=1492307069&id=id&accname=guest&checksum=D4CE12E98A688118F0E4ECDF3BC9D5BF, and http://www.oecd-ilibrary.org/social-issues-migration-health/the-risk-of-automation-for-jobs-in-oecd-countries_5jlz9h56dvq7-en

[157] PWC, UK Economic Outlook, Will robots steal our jobs? The potential impact of automation on the UK and other major economies, March 2017, http://www.pwc.co.uk/economic-services/ukeo/pwc-uk-economic-outlook-full-report-march-2017-v2.pdf

Jobenomics agrees with Oxford/Citi/OECD/PWC studies with the following caveats. Rather than investing in education, invest instead in skills training and certification as opposed to degree based education. While degree-based programs are absolutely necessary for many citizens, it is not an affordable or timely path for many at the bottom of America's economic pyramid or entrepreneurs who are focused on a particular innovative opportunity. Jobenomics also asserts that the focus ought to be on business creation as the primary means to create occupations that will satisfy next-generation business opportunities, align the workforce with new labor market realities with emphasis on the growing contingent workforce and developing new industries in the emerging energy and network technology revolutions.

As history has demonstrated, technological innovation initially has a destructive effect as automated systems replace labor, but as new industries are established, employment expands along with wage growth. Some believe that the NTR may be different from an industry standpoint. Jobenomics does not concur. A proper national strategy, led by visionary and patriotic corporate leaders, entrepreneurial contingent workforce professionals and government strategic planners, could transform the U.S. labor force and economy for generations to come. To be successful, this strategy would have to maximize productivity and prosperity of both the standard and contingent workforce, as well as achieving a proper balance between the existing traditional economy and the emerging digital economy.

The business world has already started the replacement process. With the advent of computers and personal digital assistants, most businesses have mostly eliminated the secretarial workforce. Today, semantic (thinking) websites know our shopping and buying habits and modern e-commerce is rapidly upending traditional brick-and-mortar retailing. Intelligence agents are now entering the scene. Got a question, need a direction or need a solution? Just ask Apple's Siri, Amazon's Echo or IBM's Watson for the answer.

When artificial intelligence approaches human intelligence, humans will be compelled to turn more decision-making to intelligence agents. Hypothetically, machines will eventually mature from general-intelligence to the level of human-intelligence at the point of technical "singularity" when machines become as cognitive as humans. Many experts believe that intelligence agents will achieve singularity as early as mid-century. However, in several critical domains, such as the worldwide financial system, singularity will occur much sooner.

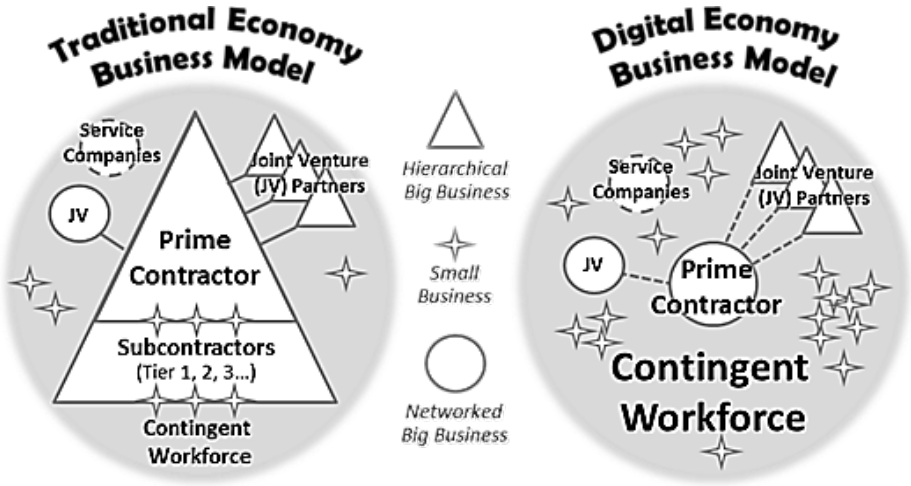
(6) Shift from full-time, to part-time and task-oriented labor. Via the NTR, the emerging digital economy, automation, outsourcing and job polarization, many traditional full-time jobs will be dissected into discrete tasks, which in turn will be addressed by temporary teams and virtual organizations staffed by a hybrid workforce consisting of standard workers, contingent workers and artificially intelligent systems.

Today's software can divide complex jobs into smaller tasks, automate the routine work, and then recruit contingent workers through online network hubs to perform non-routine work. As automated systems learn human skills, these increasingly intelligent systems will assimilate anthropomorphic traits in order to perform more and more complex non-routine cognitive and manual tasks.

Team collaborative and management tools will further create "contextual" work environments that rapidly form, perform, and then reform to address subsequent tasks. Micro jobs, micro labor and micro tasks are becoming more common. Brick-and-mortar edifices designed to house full-time employees are giving way to temporary offices, mobile computing and home-based operations—environments ideally suited for a contingent workforce. Savings in infrastructure, utility and transportation costs are subsequently shifted from the employer to the employee or nonemployee.

According to an annual four-year report and survey of 7,000 business executives in 130 countries, the Deloitte Global Human Capital Trends 2016 report states that 92% of the executives see a need to redesign their organizations from a hierarchical managerial model to "highly empowered teams, led by a breed of younger, more globally diverse leaders. To lead this shift toward the new organization, CEOs and HR leaders are focused on understanding and creating a shared culture, designing a work environment that engages people, and constructing a new model of leadership and career development." Deloitte attributes the four forces driving the demand to reorganize and redesign institutions: demographic upheavals, digital technology, rate of change and a new social contract. Over 80% of surveyed executives, across a wide range of public and private industry sectors, stated that they are in the process of restructuring or have already completed the process.[158]

Traditional versus Digital Business Models



In the Jobenomics lexicon, as shown, tomorrow's organization will be a hybrid model that embraces both the traditional and digital business models. In a traditional business model, supervisors mandate goals to meet and achieve defined performance standards accomplished by hierarchically structured and stratified teams. While the contingent workforce is present, it usually is subordinated and a small fraction of the overall workforce in the traditional business model. In a digital business model, managers coordinate dispersed tasked-focused teams that play a much greater and influential workforce role. The formula for success for a hybrid labor force is to find the right balance between

[158] Deloitte University Press, Global Human Capital Trends 2016, The New Organization: Difference by Design, http://www2.deloitte.com/us/en/pages/human-capital/articles/introduction-human-capital-trends.html

the models. Task-oriented contingent work is likely to accelerate in proportion to digital economy and e-business growth.

Contingent work will also be accelerated by the advent of online network hubs designed for task-oriented workers. Online network hubs (like Amazon's Mechanical Turk, Flexjobs, microWorkers, Fiverr, Elance and TaskRabbit) provide online labor pools usable by corporations, governments and individuals for tasks of any scale. These network hubs provide access to a highly-skilled, diverse, on-demand, scalable workforce, and correspondingly provides contingent workers a selection of millions of tasks for bid.

Similar hubs are available to contingent businesses. For example, Amazon started Amazon Launchpad[159] for startups to launch, market, and distribute their products to hundreds of millions of Amazon customers across the globe. The program offers a streamlined onboarding experience, custom product pages, a comprehensive marketing package, and access to Amazon's global fulfillment network.

Educational institutions are also experimenting with network technology and contingent workforces. Founded and run by a former Google engineer and using from the founder of Google and other philanthropic sources, AltSchool is a collaborative community of micro-schools that uses outstanding teachers (contingent workers), deep research, and innovative creative collaboration tools to offer a personalized, whole child learning experience for Generation Z. The future of business and the labor force is certainly not anything like it used to be.

(7) Cultural differences of new labor force entrants. Ethnology involves a branch of study that analyzes cultures in regard to their development, differences and relationships between various demographic groups. The ethnology of new labor force entrants will be increasingly important as 154 million NTR-savvy "Screenagers" (Generation Z, born 1996 to present, now 20 years old and younger) and "Millennials" (Generation Y, born 1980 to 1995, now ages 21 to 39) enter the workforce over the next decade, especially as it applies to the number of Screenagers and Millennials entering as contingent workers.

154 Million NTR-Savvy Screenagers (Gen Z) and Millennials (Gen Y) Will Transform the American Labor Force

Generation	Born	*Age (Oldest)*	Population *Millions*		Technology Culture	Predominant Business Asperations
Gen Z, Screenagers	1996-2016	20	87	27%	Digital	Entrepreneurial
Gen Y, Millennials	1977-1995	39	67	21%	Digital	Quasi-Entrepreneurial
			154	47%		
Gen X	1965-1976	51	62	19%	Analog/Digital	Intrapreneurial
Baby-Boomers	1946-1964	70	79	24%	Analog	Quasi-Traditional
Great Generation	1912-1945	104	31	10%	Analog	Traditional Employee
	Total U.S. Population		**325**	100%		

[159] Amazon Launchpad, http://www.amazon.com/gp/launchpad/signup

The NTR is transforming the U.S. economy from a traditional economy based on person-to-person transactions to a digital economy that is increasingly relying on machine-to-machine interactions. Netizens (internet citizens) that adapt to this transformation will prosper. Those who don't, will not.

The global digital economy will be shaped mainly by the digital generation and the ideology of their mentors. Generation Zers are called "Screenagers" by Jobenomics due to the excessive amount of online screen time that these youngsters absorb. Screenagers are the ultimate digital natives who will shepherd America into the Networked Age. Currently college age and younger, Screenagers will soon be the fast growing segment of the U.S. labor force, standing beside their digital compatriots, the Millennials, who became the largest generation in the workforce in 2015 and the largest living American generation in 2016.

Screenagers and Millennials generally prefer contingent work over traditional full-time occupations. 61% of Millennials still at "regular" jobs want to quit within two years and be entirely independent. 72% of surveyed Screenagers want to start their own business[160]. While much of this is wishful thinking, the NTR will provide many of these Millennials and Screenagers with business and traditional and contingent employment opportunities that will make their wishes come true.

Millennials are now firmly embedded into the U.S. labor force and are providing a multigenerational management challenge[161] compared to their Generation X (born 1966 to 1979) and Baby-Boomers (born 1946 to 1965) counterparts who have been integrated into the traditional workforce and corporate culture established by the baby-boom generation and their forefathers. Many Millennials, who have distinct ideas about what they expect from their jobs and the reliability of long-term corporate careers, are having a hard time conforming and integrating into traditional corporate culture.

The entrance of Screenagers, who spend an average of 7 hours a day of screen time (i.e., pads, tablets, smartphones and TV), will likely compound the workforce integration challenge since these newcomers have even greater cultural differences, expectations and timelines than the Millennials. The average Screenager compulsively communicates online 10-times as much as Millennials and 100-times the baby boomer generation.

Screenager ethnology is often incompatible with today's traditional career paths. Many people think that this will change as Screenagers mature and the harsh realities of earning a living ameliorate their cultural dissimilarities. Jobenomics is not so sure. Properly structured, the digital economy can provide employment opportunities for Screenagers who exhibit cultural dissimilarities that make them a poor fit for the traditional workforce.

---

[160] Ryan Jenkins Next Generation Catalyst, 7 Emerging Millennial and Generation Z Trends For 2015, http://ryan-jenkins.com/2015/02/05/7-emerging-millennial-and-generation-z-trends-for-2015/ , and Global Messaging, Beyond Facebook: How to Market to a New Generation, https://www.globalmessaging.co.uk/index.php/beyond-facebook-market-new-generation/

[161] Business News Daily, Despite Skeptics, Millennials Taking Control At Work, 4 September 2013, http://www.businessnewsdaily.com/5039-millennials-management-positions.html

Rather than trying to force-fit new labor force entrants into the baby boomer-oriented legacy labor pool, it is prudent to seek solutions that recognize the realities of changing workforce attitudes and help newcomers to productively pursue their unique self-interests to obtain self-sufficient lifestyles. As advocated by Adam Smith, the forefather of today's classical free market economy, when individuals pursue their self-interest, they indirectly promote the greater good of society by producing vital goods, services and tax revenues for society. Accordingly, digital natives should be afforded the opportunity to be self-directed in the emerging digital economy.

Jobenomics contends that micro and self-employed business creation is a viable way to accommodate the expanding contingent workforce and deal with the issue of cultural dissimilarities with new labor force entrants. Screenagers and Millennials represent demographic groups with high motivation and great potential for micro and self-employed business growth. Surprisingly, Baby Boomers also have significant potential since people are living longer and outliving their retirement nest eggs.

Today, China is trying to replicate its economic success by promoting micro and self-employed businesses with the rural poor. According to recent government figures, the value of Chinese micro and small business loans were $3.5 trillion[162] compared to $0.6 trillion in the United States.[163] In addition to government-sponsored initiatives and financial incentive programs, Chinese companies are aggressively facilitating micro and small business creation.

Alibaba, a Chinese e-commerce company, was founded "to champion small businesses, in the belief that the Internet (digital economy) would level the playing field by enabling small enterprises to leverage innovation and technology to grow and compete more effectively in the domestic and global economies".[164] Today, Alibaba underwrites approximately 250,000 microbusinesses per year. Other Chinese NTR companies (Jingdong, Tencent, Baidu, NetEase, Amazon China, et al) are doing the same.

If leading U.S. technology companies were inclined to help U.S. contingency workers create micro and small business in support of filling the 6 million job openings and seizing emerging ETR/NTR employment opportunities, America could put tens of millions of young people to work as well as creating millions of small and self-employed businesses.

Given these seven trends, Jobenomics forecasts that the contingent workforce will continue to rise and eventually overtake today's traditional workforce as early as 2030. More importantly, the nature and character of the U.S. labor force, business and the economy is evolving at an ever increasing rate.

---

[162] Reuters, China pushes for more small business lending despite bad loans rising, 8 May 2015, http://www.reuters.com/article/2015/05/08/us-china-economy-idUSKBN0NT0O320150508

[163] U.S. Small Business Association, Small Business Lending in the United States 2013 (Published December 2014), Table B. Value of Small Business Loans Outstanding by Loan Type and Size through June 2014, https://www.sba.gov/sites/default/files/2013-Small-Business-Lending-Study.pdf

[164] Kauffman Foundation, The Importance of Startups in Job Creation and Job Destruction, Last Paragraph, 9 Sep 2010, http://www.kauffman.org/what-we-do/research/firm-formation-and-growth-series/the-importance-of-startups-in-job-creation-and-job-destruction

More attention needs to be given to maximizing productivity and income security for the contingent workforce.

Workforce Education and Training Challenge

The Father of American Education, Horace Mann, stated that "Education then, beyond all other devices of human origin, is the great equalizer of the conditions of men, the balance-wheel of the social machinery." While Jobenomics agrees, the educational paradigm required for yesteryear's workforce development may not be appropriate for today's labor pool.

Today the U.S. labor force is increasingly characterized by income inequality, an eroding middle class and growing numbers of contingency workers that traditional degree-oriented educational programs have not been able to help. More skills-based training and certification programs are needed.

The bifurcation of American society into haves and have-nots, skilled and unskilled, and hopefuls and the hopeless is a major educational and training challenge. To those at the top of the American socioeconomic pyramid, the old paradigm of "get a degree to get a job and get a better degree to get a better job" is more important than ever. To those at the bottom of the same pyramid, more workforce, technical and social skills training are needed to stem the increasing exodus to welfare and alternative lifestyles. Getting a postsecondary associate or baccalaureate degree is a bridge too far for many living close to the poverty level, or for primary and secondary school underachievers.

The Difference between Education and Training. Jobenomics National Grassroots Movement focuses on small business and job creation for those most in need at the base of America's socioeconomic pyramid. Jobenomics asserts that pre-primary through secondary education is a must for all citizens. However, due to the slow-growth economy, the scarcity of jobs and ethnology of many students, earning a degree is not worthy of pursuit since degrees no longer guarantee a livable wage or a viable career path. In addition, the cost in time and money for an advanced education is often unavailable for those struggling to make ends meet. Consequently, Jobenomics asserts that as opposed to degree-oriented education, skills-based training is the fastest way to get the most people prepared for workfare in the shortest time possible.

From a Jobenomics perspective, understanding the difference between education and training is fundamental to U.S. labor force development. Education is foundational and generally measured by tenure. Training is specific and measured by what one can do once completed. Educational degree-oriented programs are measured in years and are usually expensive. Training programs are often as short as weeks or months, and are relatively inexpensive.

Education is defined as the process of imparting or acquiring general knowledge, developing powers of reasoning and judgment, and generally of preparing intellectually for mature life. Education generally involves learning theory. In the United States, there are four levels of education: pre-primary, primary, secondary and tertiary.

- Pre-primary education includes kindergarten, nursery schools, preschool programs and child/day care centers.
- Primary education refers to 1st through 9th grades.
- Secondary education refers to the last four years of high school (9th through 12th grade).

- Tertiary education, also called postsecondary, refers to academic pursuit undertaken after high school. Postsecondary undergraduate programs, generally include associate and bachelor (baccalaureate) programs. Postsecondary post-baccalaureate pursuits generally include masters and doctorate programs.

Primary, secondary and postsecondary educational programs are degree-oriented. Primary and secondary education are compulsory (required by law), whereas pre-primary and postsecondary education is not. Jobenomics believes that free pre-primary education should be available to all but not compulsory. In regard to postsecondary education, Jobenomics contends that too many youth are being encouraged to attend college for the wrong reasons. Luring them with free tuition without a reasonable path to future employment is antithetical to good labor force policy.

Training involves teaching a person a particular skill, knowledge or type of behavior that is related to specific competencies. Training has targeted goals of improving an individual's capability, capacity, productivity and performance. While some training programs are degree-oriented (such as technical colleges), most training programs (such as skills training, on-the-job training, occupational training, apprenticeships and internships) are certificate-oriented. Jobenomics believes that significantly more skills-based training certification programs should be offered starting at an early age and supplemented by government means-tested funding programs as needed to achieve maximum attendance. Jobenomics contends that this would be a wise use of taxpayer money if skills-based training programs are tied to economic and employer prerequisites.

For people seeking careers, degree-oriented postsecondary programs are usually the best choice. For the underprivileged, unskilled and poorly educated segments of society, certificate-oriented skills-based training provides the most effective way to get a good job, the first step towards a meaningful career.

Evolution of American Education. Horace Mann's greatest achievement was making education affordable to average citizens who could not afford to send their children to school by instituting taxes to create "common schools" in Massachusetts. Heretofore, education was available mainly to the rich. Common schools were such a success that they rapidly spread to other states.

The Industrial Revolution in the late 1800s created a need for more specialized education and was the foundation for the state-run university system and the rise of a "credentialed" society. To a large extent today, the American psyche maintains that workforce eligibility depends on degrees and diplomas. Degrees from elite universities are still perceived to be the proper path to desirable jobs.

The Information Technology Revolution of the 1980s and today's Network Technology Revolution are redefining the educational paradigm in the same way that the Industrial Revolution redefined secondary and postsecondary education standards of yesteryear. As a result of the transformative nature of these technology revolutions, universities around the world are beginning to recognize that over-specialized, mass-produced, degree-oriented programs may not be able to provide job skills that students and businesses need or want to succeed in today's economy.

Today's students are digital natives who are largely self-taught from countless hours on the internet. A great percentage of these young workforce entrants view industrial-oriented career paths with a high degree of skepticism.

In 2014, Laureate Education, the world's largest higher education network with more than 850,000 students worldwide, commissioned Zogby Analytics to survey 27,000 postsecondary students on how universities could best meet their needs. Based on their survey, students said that they need a more accessible, flexible, innovative and job-focused education. More than 70% think that career-oriented skills, as opposed to subject matter, are required. 61% think that most courses offered by universities need to be taught by industry experts as opposed to tenured academics. 41% want to be able to earn specialized certificates in addition to degrees.[165]

As a result of this survey, Laureate and Zogby introduced a groundbreaking index to track student attitudes about the future of higher education. According to the 2015 Index, 80% of students believe that the primary purpose of education is to improve employment prospects, and 96% want universities to foster entrepreneurialism as opposed to academia.[166]

Likewise, American businesses are increasingly dissatisfied with the lack of applied-knowledge, problem-solving, critical-thinking and communication skills of postsecondary school graduates. To fill the gap, more and more corporations conduct their own postsecondary school and post-college training. According to the Georgetown University Center on Education and the Workforce, while colleges and universities spend $407 billion annually on postsecondary education, employers spend $342 billion on postsecondary school and post-college training.[167] Based on these statistics, degree-based college and university programs are not providing employment-ready graduates.

Even the Association of American Colleges & Universities seems to agree with student and business dissatisfaction. According to recent Association report, "The ongoing digital revolution has created a complex and interconnected ecosystem that is fundamentally reshaping how we learn and communicate. Yet, despite its transformative potential, this digital ecosystem has so far had less of an impact on formal education than on other sectors of our society". Furthermore, the report's authors propose that networked and adaptive systems "re-bundle" higher education by connecting learning experiences to new integrative contexts for transformative learning.[168]

---

[165] Zogby Analytics, The University of the Future: The Laureate/Zogby Global Students Poll, 9 June 2014, http://www.zogbyanalytics.com/news/459-the-university-of-the-future-the-laureate-zogby-global-students-poll

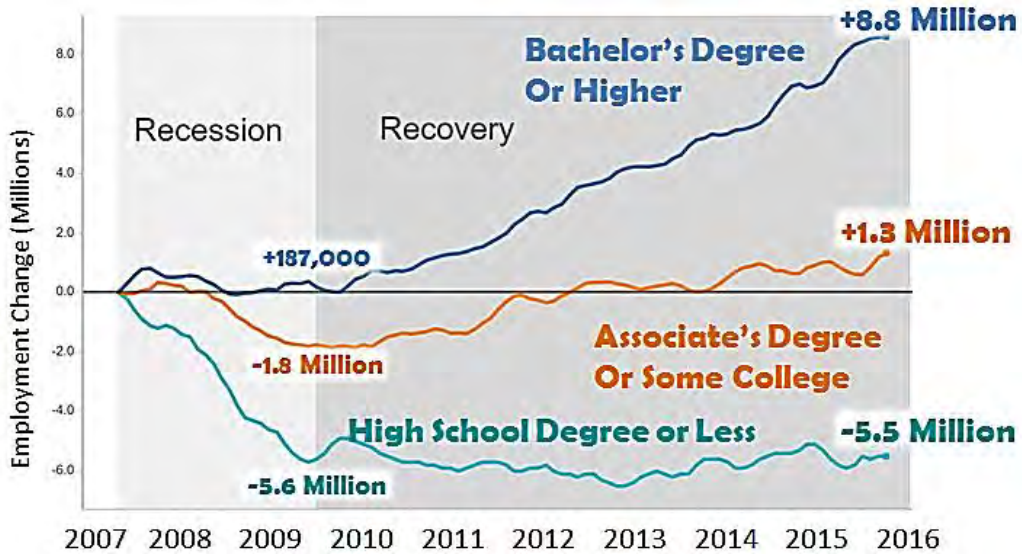
[166] Zogby Analytics, 2015 Laureate/Zogby Global Student Confidence Index, May 2015, https://www.laureate.net/Thought-Leadership/~/media/Files/LGG/Documents/Thought%20Leadership/Laureate%20Zogby%20Global%20Student%20Confidence%20Index.ashx

[167] Georgetown University Center on Education and the Workforce, U.S. Spending On Post-Secondary Education And Training Reaches $1.1 Trillion, 4 February 2015, https://cew.georgetown.edu/wp-content/uploads/2015/02/Training-Press-Release-2.4.14.pdf

[168] Association of American Colleges & Universities, Open and Integrative: Designing Liberal Education for the New Digital Ecosystem, 16 June 2016, https://secure.aacu.org/store/detail.aspx?id=GMSDIG

U.S. Employment by Type of Degree

Source: Georgetown University Center on Education and the Workforce



The U.S. Employment by Type Degree analysis was developed by the Georgetown University Center on Education and the Workforce. It shows the value of having a postsecondary Degree compared to an associate's degree or some college, and a high school degree or less during the 2007-2009 Great Recession and the following recovery period.[169]

According to the report, over the last decade (2007 to 2016), graduates with a bachelor's degree, or higher, added 8.8 million overall jobs since the beginning of the Great Recession. Undergraduates with some college or an associate's degree added 1.3 million jobs. Individuals with a high school diploma or less lost 5.5 million jobs during the same time period. In other words, having some college did not significantly enhance a person's employment prospects and having a high school degree meant even less.

The answer to this employment challenge is not by having everyone attend college and earn a bachelor's degree. If everyone had a bachelor's degree, it would depreciate the value of having a college degree and undermine the worth of finishing high school.

The answer to today's employment challenge is creating more small businesses that can employ people with either low skills or high skills. Since the vast majority of Americans at the bottom of the U.S. socioeconomic pyramid are clustered around the lower skill levels, skills-based training is a more viable alternative for workforce and economic development.

Postsecondary Education Enrollment, Costs and Student Loans. According to the U.S. Department of Education, total undergraduate enrollment in degree-granting postsecondary institutions was 17.5

[169]Georgetown University, Center on Education and the Workforce, America's Divided Recovery, College Haves and Have-Nots 2016, https://cew.georgetown.edu/wp-content/uploads/Americas-Divided-Recovery-web.pdf

million in 2017, an increase of 37% from 2000, and 2.9 million post baccalaureate students, an increase of 36% from 2000. [170]

Of the 17.5 million undergraduate students:

- 78% go to public institutions and 22% private institutions
- 62% are full-time students and 38% part-time students
- 60% are enrolled in 4-year institutions and 40% in 2-year institutions
- 56% are female and 44% are male

Of the 2.9 million undergraduate students:

- 48% go to public institutions and 52% private institutions
- 57% are full-time students and 43% part-time students
- 58% are female and 42% are male

Total U.S. Fall Enrollment in Degree-Granting Postsecondary Institutions

Source: U.S. Department of Education, National Center for Education Statistics

	Undergraduates			Postbaccalaureate		
Decade	Enrollment (Millions)	Enrollment Growth	Growth Rate	Enrollment (Millions)	Enrollment Growth	Growth Rate
1980	10.5	-	-	1.6	-	-
1990	12.0	1.5	14%	1.9	0.2	15%
2000	13.2	1.2	10%	2.2	0.3	16%
2010	18.1	4.9	**37%**	2.9	0.8	**36%**
2017	17.5	-0.6	**-3%**	3.0	0.0	**0%**
2026 Est.	*19.3*	*1.9*	*11%*	*3.3*	*0.3*	*11%*

The great surge to degree-granting postsecondary institutions (i.e., colleges and universities) occurred during the 2000 to 2010 time period, which was characterized by two recessions, losses of over 8.7 million American jobs and the massive influx of 5.7 million new students—a growth rate between 36% and 37% as highlighted in green above. Despite significant political rhetoric of the American progressive movement that everyone should be afforded a college education, enrollment dropped between 2010 and 2017 by as much as 3% as highlighted in red. By 2026 the U.S. Department of Education forecasts a resurgence of postsecondary enrollment by 11%, but Jobenomics suggests that is prediction is overly optimistic due to decreasing foreign enrollment, sticker shock of massive college debt and the lack of evidence that a college education is a viable gateway to a good job.

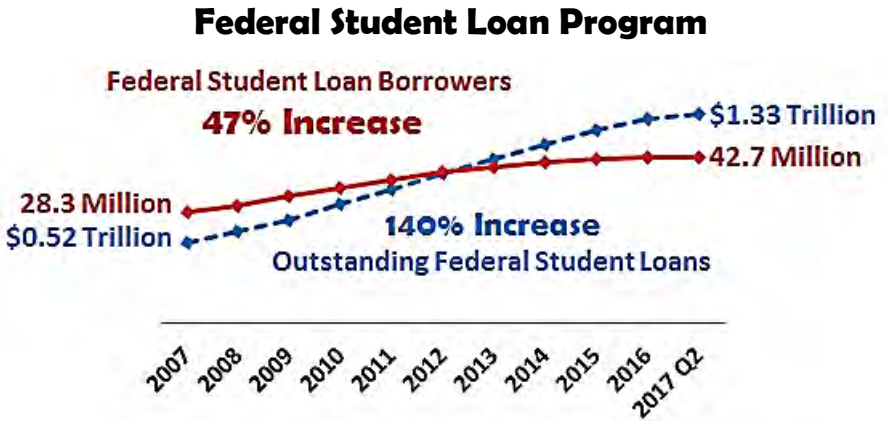
[170] U.S. Department of Education, National Center for Education Statistics, Undergraduate Enrollment; https://nces.ed.gov/programs/digest/d16/tables/dt16_303.70.asp, and Postbaccalaureate Enrollment, https://nces.ed.gov/programs/digest/d16/tables/dt16_303.70.asphttps://nces.ed.gov/programs/digest/d16/tables/dt16_303.80.asp

The aforementioned Georgetown study reports that not only did the people at the top of the educational pyramid get jobs, they captured the vast majority of the good jobs — full-time jobs that pay more than $53,000 per year with benefits, such as employer provided health insurance and retirement plans. The Georgetown study also cautions students to seriously weigh the benefits verses the costs in getting these "good" jobs.

The average student loan debt is around $30,000, but with rising tuitions, $50,000 is a more reasonable figure for future graduates, and over $150,000 for elite university baccalaureate programs. For many at the bottom of America's economic spectrum, getting a postsecondary student loan is perceived as the only way to move up the socio-educational pyramid—often a great cost that may or may not be fiscally prudent.

According to the Board of Governors of the Federal Reserve System's Report on the Economic Well-Being of U.S. Households in 2016 - May 2017, 30% of American adults report that they borrowed money to pay for expenses related to their own education, including 17% who currently owe money on these loans. Per the Fed's report, "While education debt is often in the form of student loans, this is not the exclusive form of borrowing to pay for higher education expenses. Among respondents who report that they currently owe money for their own educational expenses, 94 percent report owing money on student loans, but 20 percent have education-related credit card debt, 5 percent have a home-equity loan or line of credit used for education expenses, and 4 percent have education debt of some other form."[171]

According to the National Center for Education Statistics, in academic year 2014–15, postsecondary institutions spent $536 billion. Total expenses were $336 billion at public institutions, $182 billion at private nonprofit institutions, and $18 billion at private for-profit institutions.[172]



According the U.S. Department of Education, in 2007, total student debt and student loan recipients were $0.52 trillion and 28.3 million respectively. As of Q2 2017, outstanding student loans total

[171] Board of Governors of the Federal Reserve System's Report on the Economic Well-Being of U.S. Households in 2016 - May 2017, Education Debt and Student Loans, https://www.federalreserve.gov/publications/2017-economic-well-being-of-us-households-in-2016-education-debt-loans.htm

[172] National Center for Education Statistics, Fast Facts, How much do colleges and universities spend on students? https://nces.ed.gov/fastfacts/display.asp?id=75

$1.33 trillion (an all-time high, up 156% from 2007), with 42.7 million federal student loan borrowers (also an all-time high, up 51% from 2007).[173] The rate of growth is projected to continue to increase at a rate of 8% per year. If correct, there will be 97 million student loans totaling $2.9 trillion by 2026.

From a Jobenomics standpoint $2.9 trillion seems unreasonably high due to the flattening of student loan borrowers (shown above in red); the rise of low cost, on-line systems like MOOCs (massive open online courses); and increasing preference to skills-based training and certification programs over degree-based education. However, if the Progressive Movement gets its free, or greatly subsidized, college education proposals enacted, $2.9 trillion could be a conservative number since the debt would be shifted from the student to the taxpayer.

62% of all surveyed Americans support making public universities, colleges and community colleges tuition-free for anyone who attends.[174] During the recent Presidential election campaign, both Democrat Party candidates, Hillary Clinton and Bernie Sanders, supported tuition-free enrollment.

According to the Clinton's campaign website, families with an income up to $85,000 today, rising to $125,000 by 2021, would pay no tuition at in-state 4-year public colleges and universities. Community college students would also pay no tuition. Current borrowers would be able to refinance loans at current rates, never having to pay back more than 10% of their income. All remaining college debt would be forgiven after 20 years. The Clinton Plan would cover more than 80% of all U.S. families. The Clinton Plan would also create an additional $25 billion fund will support historically black colleges and universities, Hispanic-serving institutions, and other minority-serving institutions. Social entrepreneurs and those starting new enterprises in distressed communities would be eligible for up to $17,500 in loan forgiveness. Parents with PLUS loans will be able to refinance at current rates and students with children would be afforded childcare assistance. [175]

If tuition-free supporters get their way, the total cost of public postsecondary education ($324 billion per year) will shift to taxpayers, which equates to half the annual amount spent on the U.S. Armed Forces. However, many argue that tuition-free postsecondary education could be fully paid for by limiting certain tax expenditures for high-income taxpayers.

Jobenomics contends that high-income taxpayers should pay more than they currently are, but their payments should be tied to specific workforce and business development goals, actionable milestones and workfare requirements. Most high-income taxpayers have business backgrounds and a work ethic.

Based on Jobenomics discussions with a number of high-income earners, they are not averse to giving, but greatly prefer philanthropy over charity. Teaching a person to fish for a living is highly

---

[173] U.S. Department of Education, Office of Federal Student Aid, Federal Student Aid Portfolio Summary, July 2016, https://studentaid.ed.gov/sa/about/data-center/student/portfolio

[174] Bankrate, Clinton floats college tuition plan. Will it fly?, 7 July 2016, http://www.bankrate.com/financing/saving-money/clinton-floats-college-tuition-plan-will-it-fly/#ixzz4G5qxNK5y

[175] Hillary, Making college debt-free and taking on student debt, retrieved 1 August 2016, https://www.hillaryclinton.com/issues/college/

preferable to the daily giving of fish. Moreover, many high-income earners are philantro-capitalists. Philantrocapitalism applies for-profit capitalist objectives, such as private property and ownership, to address poverty and unrest. Many philantro-capitalists told this author that micro-business loans and equity financing could be readily obtained for the right initiatives and projects. Jobenomics has micro-business loan commitments for several of its city initiatives in the $100 million range.

Tuition-free postsecondary education supporters also argue that free tuition will help enroll and graduate more people, and therefore pay for itself via increased government taxes and economic growth. While this argument is true due to the higher earning potential of graduates with bachelor's degrees, it understates the length of the payback period, the degree of economic impact of graduates with unemployable credentials, the negative impact on people who with less than a postsecondary degree, and the deleterious impact of the ever increasing number of discouraged low-skilled workers who voluntarily leave the workforce for public assistance and the underground economy.

From a Jobenomics perspective, while it is beneficial to get a college degree for high paying and high growth rate occupations, it is equally important to gain the skills needed to get a job. While a degree is still considered an advantage, the right degree can make a big difference in getting a meaningful job or being underemployed, which is the case for many college graduates.

Not all degrees are created equal. According to another recent Georgetown Center on Education and the Workforce study, the risk of unemployment among recent college graduates depends largely on their major. Entry-level salaries for many graduates (such as those majoring in art-related career fields) are $30,000, which is less than what they can get on welfare in HI, DC, CT, NJ, RI, VT, NH, MD, CA, WY, OR, MN, NV, WA, ND, NM, DE and equal to benefits provided by a dozen other states.[176]

Not all degrees lead to good jobs. In fact, many lead to **under**employment. According to a recent PayScale study, college degrees that are most likely (50%+) to lead to underemployment are: Criminal Justice (62%), Business Management & Administration (60%), Healthcare Administration (58%), General Studies (55%), Sociology (53%), English Language & Literature (52%), Graphic Design (52%), Liberal Arts (50%), Education (50%) and Psychology (50%).

Since about half of all new jobs projected by the BLS in the next decade are in these or related occupations, it may be safe to assume that half of all graduates will be underemployed—assuming they find a job at all. Even more disturbing, PayScale reports that workers with some college education but no degree are more likely to be underemployed than a worker with only a high school or GED degree, 57% versus 52% respectively. 41% percent of MBA degree holders reported being underemployed, and of those almost 90% are not using their education in their current job, the highest percentage of any degree holders PayScale surveyed. Medical doctors are the lowest level of underemployment at 30% overall. [177]

---

[176] Georgetown Center on Education and the Workforce, Hard Times: College Majors, Unemployment and Earnings: Not All College Degrees Are Created Equal, http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/Unemployment.Final.pdf

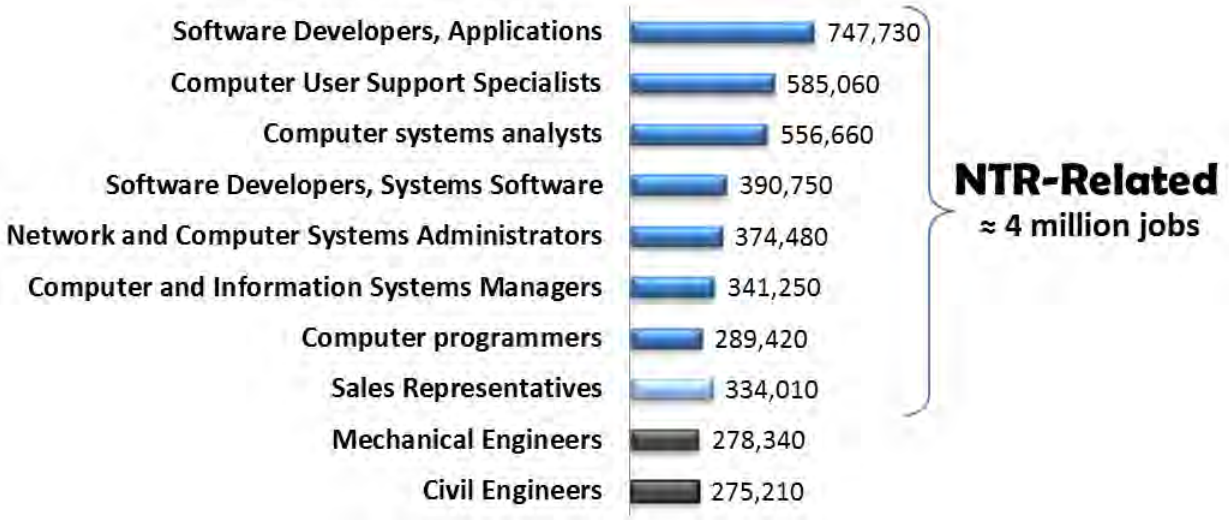
[177] PayScale, Underemployment Report, http://www.payscale.com/data-packages/underemployment and http://www.payscale.com/data-packages/underemployment/education-level

For last year's college graduates, the employment and underemployment picture is much bleaker than it was prior to the Great Recession.

According to the Economic Policy Institute, despite an improving economy, 2015 grads still face an uphill climb. For young college graduates, the unemployment rate is currently 7.2%, compared with 5.5% in 2007, and the underemployment rate is 14.9%, compared with 9.6% in 2007. "The high share of unemployed and underemployed young college graduates and the share of employed young college graduates working in jobs that do not require a college degree underscore that the current unemployment crisis among young workers did not arise because today's young adults lack the right education or skills. Rather, it stems from weak demand for goods and services, which makes it unnecessary for employers to significantly ramp up hiring." To make matters worse, the higher cost of education has grown far more rapidly (more than doubled over the last two decades) "far more rapidly than median family income, leaving students with little choice but to take out loans which, upon graduating into a labor market with limited job opportunities, they may not have the funds to repay".[178]

Employment in the Largest U.S. STEM Occupations in 2015

Source: BLS 2015 Occupational Employment Statistics



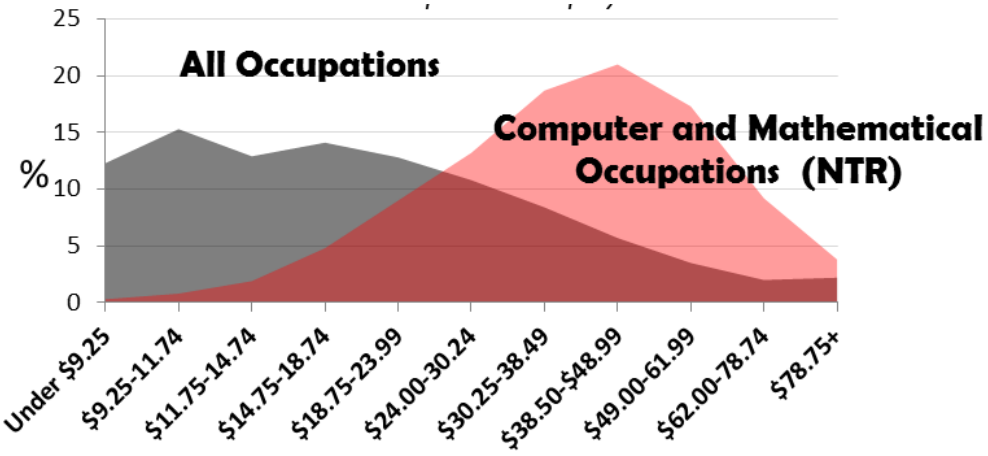
Graduates educated in liberal arts are far more likely to be underemployed than those educated in Science, Technology, Engineering and Math (STEM). STEM degrees related to the NTR and the emerging digital economy are projected to capture approximately 4 million of the 9.8 million new jobs projected by the BLS. Furthermore, STEM degrees related to computer and mathematical (NTR-related) occupations will provide higher salaries and greater number of jobs as compared to other occupations as indicated by the BLS 2015 Occupation Employment Statistics data.[179]

[178] Economic Policy Institute, The Class of 2015, Despite an Improving Economy, Young Grads Still Face an Uphill Climb, 27 May 2015, http://www.epi.org/publication/the-class-of-2015/

[179] BLS, Occupational Employment Statistics, Data tables for the overview of May 2015 occupational employment and wages, http://www.bls.gov/oes/2015/may/featured_data.htm#largest

Wage Ranges for Occupations in 2015

Source: BLS 2015 Occupational Employment Statistics



From a Jobenomics perspective, more discipline is needed to prepare postsecondary students for current job openings by industry and the emerging employment opportunities created by the energy and network technology revolutions. Education in STEM-related subjects, especially those closely associated with the emerging digital economy will be especially important in revitalizing the U.S. labor force and economy.

Skills-Based Training & Certification Programs. With such a rapid rise in costs and demand for a postsecondary education, poorly educated and unskilled workers at the bottom of the U.S. educational and socioeconomic pyramid are getting farther and farther behind. At some point having a baccalaureate degree will be the new standard for employment replacing today's high school diploma or equivalent General Educational Development (GED) certificate.

If tuition-free college education policies are adopted, the gap between the educated and uneducated will widen even further—likely leading to even greater high school dropouts and voluntary workforce departures. Moreover, only 44% of college and university students complete their college education, putting them behind the power curve in today's tepid labor market.

According to the Economic Policy Institute, despite an improving economy, 2015 high school grads also face an uphill climb in today's tepid labor market. For the Class of 2015 high school graduates, the unemployment rate is currently 19.5%, compared with 15.9% in 2007, and the underemployment rate is 37.0%, compared with 26.8% in 2007 prior to the Great Recession. The slow pace of the post Great Recession recovery means that high school graduates have to compete with more-experienced workers in "suboptimal labor market conditions, resulting in stagnant wages and limited job opportunities". [180]

[180] Economic Policy Institute, The Class of 2015, Despite an Improving Economy, Young Grads Still Face an Uphill Climb, 27 May 2015, http://www.epi.org/publication/the-class-of-2015/

Yesteryear's degree-oriented paradigm, does not guarantee work in today's high-tech, slow-growth economy where middle-class jobs are increasingly outsourced overseas or automated. Many citizens need short-term skills training and certification programs as opposed to longer-term degrees bestowed by postsecondary institutions. If 44% of college students drop out of college and 40% of college graduates have difficulty finding jobs, how can a high school dropout hope to find legitimate work? The answer is that many don't.

Horace Mann also concluded that "jails and prisons are the complement of schools; so many less as you have of the latter, so many more must you have of the former." Horace Mann, born in the 18th Century, could not have envisioned that in the 21st Century his jails and prisons quote would be as prophetic as it is today.

The United States has more people incarcerated per capita than any other nation in the world. Approximately 2.3 million Americans are incarcerated including 1,310,000 in state prisons, 646,000 in local jails, 211,000 in federal prison and 34,000 in youth detention facilities.[181]

It is highly likely that these prisoners, as well the formerly incarcerated, preferred to learn short-term criminal skills as opposed to long-term educational degrees. It is also highly likely that jails and prisons excel in advanced criminal skill training and mentoring as evidenced by the high rate of recidivism (relapsing into criminal behavior).

From a Jobenomics perspective, basic skills training targeted at high demand jobs would provide viable alternatives to lives in crime. Jobenomics offers these kinds of training programs for the formerly incarcerated. For example, Jobenomics is developing a business plan with former ex-offender community leaders for a Jobenomics Workforce Reentry Center in Phoenix, Arizona, with the goal of creating microbusinesses and jobs for formerly incarcerated, gang members and at-risk youth.

For depressed and disenfranchised communities, especially in many of the large metropolitan inner-cities, Jobenomics emphasizes three basic forms of skills training: tradecraft, communication and small business creation.

- First priority is tradecraft—a skill acquired through experience in a specific trade—with emphasis on skilled services. Too few workforce entrants or discouraged workers understand how they can obtain workforce skills via short-term training programs, internships and apprenticeships.
- Second priority is communications. In a business sense, communication entails the ability to express and demonstrate one's value-proposition. Without an ability to communicate effectively, a skilled individual will have difficulty maintaining a job.
- The third priority is small business creation with emphasis on services-providing startups that can be created and implemented with short-term training, certification programs and funding. Small businesses also offer the fastest way out of poverty through employment for the unemployed and

[181] Prison Policy Initiative, Mass Incarceration: The Whole Pie 2016, http://www.prisonpolicy.org/reports/pie2016.html

underemployed. Every city should have a community-based business generator that trains, implements and mass-produces highly-scalable small and self-employed businesses.

Job "Skill" Zones 1 Through 5

Source: O*NET[182]

Skill Level	Zone 1	Zone 2	Zone 3	Zone 4 & 5
Preparation	Little or none	Some	Medium	Considerable or extensive preparation needed. The J-CBBG will fast track these individuals who want to start a business.
Education	None, GED, High School	GED, High School	Vocational school, on-the-job experience, or associate degree	
Experience	Little or no previous skill or knowledge	Some previous work-related skill or knowledge	Previous work-related skill or knowledge	
Job Training	Few days to a few months	One to two years on-the-job experience or apprenticeships	Several years of work-related experience, on-the-job training, and/or vocational training	
Examples	*Taxi drivers, waiters, clerks*	*Electricians, food service managers, assistants*	*Accountants, sales managers, database administrators, teachers*	*Supervisors, managers, owners*

According to O*NET, the nation's primary source of occupational information on 974 occupations, a Job Zone is defined as a group of occupations that are similar in skills possessed by an individual who wants to work, how much related experience is needed to perform a task or work, and how much training/education is needed to qualify the individual for the job or task. High-skilled labor requires Zone 3-5 skills that usually are substantiated by degrees from accredited educational institutions. Lower-skilled individuals usually require Zone 1-2 skills that usually are obtained by certifications from accredited training institutions (schools and businesses).

Low skilled individuals at the base of America's socioeconomic pyramid are often trapped between choosing a long-term path of gaining a degree (GED, high school or postsecondary) or dropping out of the labor force entirely—often public assistance or alternative lifestyles. While there is no evidence that people on welfare are lazy or immune to work, there is evidence that many welfare recipients lack the skills necessary to obtain the types of jobs that pay above-average wages, which, in turn, makes welfare an attractive option. If there is any doubt about a poor person's willingness to work, one only has to attend an inner-city job fair. More often or not the lines are block's long. Jobenomics recently attended a job fair in Camden, New Jersey where 5,000 underprivileged citizens filled out resumes and employment forms in 95 degree weather for 50 entry level jobs.

According to a 2013 CATO Institute study[183], "the current (U.S.) welfare system provides such a high level of benefits that it acts as a disincentive for work….Welfare currently pays more than a

[182] O*NET OnLine, Job Zones, https://www.onetonline.org/help/online/zones
[183] CATO Institute, The Work Versus Welfare Trade-Off: 2013, http://object.cato.org/sites/cato.org/files/pubs/pdf/the_work_versus_welfare_trade-off_2013_wp.pdf

minimum-wage job in 35 states, even after accounting for the Earned Income Tax Credit….In 13 states it pays more than $15 per hour." Also according to the CATO study, one would have to make more than $60,000 (pretax wage equivalents) in Hawaii and more than $50,000 in Washington DC and Massachusetts to beat the level of welfare payments.

The attractiveness of the U.S. welfare system—that is decoupled from any workfare requirements as required in the most liberal European nations—often outweighs the promise of degreed-jobs that have proven to be increasingly elusive and unattainable in today's polarized labor market. In addition, many disenfranchised individuals in financially depressed communities exhibit antiestablishment and counter-cultural attitudes that view standard work as passé, outmoded and less lucrative than they can achieve by a combination of public assistance, the underground economy, barter, alternative lifestyles and even criminal behavior.

Consequently, for unskilled, poorly educated and discouraged workers, Jobenomics is implementing short-term skills training and certification programs, which are significantly more attractive than degree-oriented programs, in order to encourage/engage/reengage individuals in workfare.

Low wages are a deterrent to workfare, thereby making welfare a more attractive alternative. To mitigate this deterrent, Jobenomics believes that being a participant in a small business startup offers an additional incentive for rapid upward mobility into management and enhanced income opportunities. This is the principle that many companies, like fast-food chains, utilize. For example, McDonalds offers a path for employees to start as crew members, who are offered a career path to advance to crew chiefs, then managers and finally to owners.

Most people perceive that minimum wage laws apply mainly to the 4.7 million fast-food industry workers. This perception understates the serious consequences of a universal minimum wage to all businesses, the labor force and the U.S. economy. If a $15/hour minimum wage was implemented today nation-wide and all current able-bodied Americans who can work were considered, 159 million citizens would qualify for the minimum wage threshold.[184] 44 million Americans in the top 50 projected highest growth occupations listed in the BLS Occupational Outlook Handbook would need an hourly increase in pay of up to $6 per hour to meet the threshold. According to the Handbook, 22 out of the 36 (61%) top non-college degree occupations make below minimum wage. [185]

Jobenomics endorses the concept of a livable wage, especially for enticing people to join the workforce. However, upward mobility is hampered by cutting off the low wage steps of the wage scale ladder. Fewer people will be able to climb the ladder because the first step will be much higher. Furthermore, businesses will be more motivated to automate manual and cognitive labor as opposed to hiring. McDonalds, Wendy's, and many other service-providing companies, are switching to self-ordering and automated systems to avoid the $15 minimum wage. At the end of the day, fewer people will be hired, valuable skills training would be curtailed and upward mobility diminished.

---

[184] U.S. Census Bureau, Current Population Survey, 2015 Annual Social and Economic Supplement, PINC-05, Work Experience in 2014--People 15 Years Old and Over by Total Money Earnings in 2014, Age, Race, Hispanic Origin, and Sex, http://www.census.gov/hhes/www/cpstables/032015/perinc/pinc05_000.htm

[185] BLS, 2016-17 Occupational Outlook Handbook, Table 1.3, http://www.bls.gov/ooh/

In a Bloomberg interview with Mary Kay Henry, the President of the Service Employees International Union (SEIU, an organization of 2 million unionized service workers), Ms. Henry stated that a $15 minimum wage would be a boon to small businesses since workers would have more money in their pockets to spend. Jobenomics agrees with this statement. Jobenomics also agrees with SEIU's recommendation to provide "job ladders and training" for low-wage earners to escape poverty. Per Ms. Henry, "We now have 10 million workers on a path to $15 in New York and California. It will be fascinating how transformative those dollars are to economic growth in those communities."[186]

Jobenomics believes that the New York and California minimum wage efforts will be fascinating indeed, especially on the impact on small businesses. Hopefully, they will succeed. Even if they don't, they will provide valuable data and lessons learned.

- According to California Governor Jerry Brown, California's new minimum wage law will increase the wage for about 6.5 million California residents which equates for a pay increase for 43% of the state's private sector workforce.[187]
- New York's minimum wage will lift the earnings of more than 2.3 million New Yorkers (29% of the state's private sector workforce) plus a 12 week paid family leave policy. According to Governor Cuomo, these policies will show the nation that New York is leading "the way forward on economic justice". Businesses in the New York metropolitan area that have high costs of living are likely to easily absorb $15/hour, but smaller cities and rural areas with lower costs of living may not find it so easy. The New York minimum wage schedule for New York City is focused on "large business", which New York defines as businesses with a least 11 employees (employers with 11 employees are considered microbusinesses by Jobenomics) and will start $11 an hour in 2017 and increase to $15 by 2019. For workers outside the NYC metro, minimum wage would start at $9.70 in 2017, grow to $12.50 in 2021 and continue to increase to $15 based on an "indexed schedule" determined by the State. [188]

Rather than instituting a universal minimum wage, Jobenomics prefers workforce incentives and supplements that would encourage citizens—115 million below average wage earners, 15 million unemployed and underemployed workers, 16 million new workforce entrants per year and 95million sidelined able-bodied citizens who choose not to work—to join the U.S. labor force. Incentives and supplements would include programs like a livable minimum wage in proportion to the local cost of living, temporary exemptions for internships, and a transition period to allow welfare recipients to keep a portion of their benefits as they transition to workfare. In other words, rather than funding

[186] Bloomberg Businessweek, Union Booster Mary Kay Henry, 20 October 2016, http://www.bloomberg.com/news/articles/2016-10-20/union-booster-mary-kay-henry

[187] USA Today, $15 minimum wage coming to New York, Calif., 5 April 2016, http://www.usatoday.com/story/news/nation/2016/04/04/california-new-york-minimum-wage-hikes-signed-into-law/82617510/

[188] New York State, News Release, Governor Cuomo Signs $15 Minimum Wage Plan and 12 Week Paid Family Leave Policy into Law, 4 April 2016, https://www.governor.ny.gov/news/governor-cuomo-signs-15-minimum-wage-plan-and-12-week-paid-family-leave-policy-law

people not to work, subsidize them to work by providing ways to bridge the gap between low wages and livable wages.

Building welfare to workfare "bridges" is only the first step. The next step involves building career paths (ladders) via certified training programs designed to quickly advance people up the initial steps of the ladder. The final step is to mass-produce highly-scalable small businesses—the employer of the vast majority of Americans, low income wage earners, new workforce entrants and the formerly unemployed—to provide meaningful ownership and long-term career opportunities for those that start their journey at the bottom rung of the ladder.

The U.S. federal Earned Income Tax Credit (EITC) program subsidizes low- to moderate-income working individuals and couples, particularly those with children. In addition to EITC, the federal government funds 126 separate welfare and social program expenditures programs targeted at subsidizing the poor, the disabled and elderly. State, county and municipal governments offer additional welfare and public assistance programs. Total U.S. welfare and social program expenditures are estimated to exceed $4 trillion per year. Over 50 million people receive nutrition subsidies (food stamps) and another 13 million people receive public or subsidized housing assistance each year. Perhaps, it's time for America to create more incentives and subsidizes for people who desire to become self-sufficient via workfare. A culture of self-sufficiency is vastly superior to a culture of dependency.

Subsidies should also be considered for mass-producing startup businesses, especially in depressed communities. These startup businesses would be the economic engine that could revitalize many declining urban and rural communities. To incentivize mass-production of highly-scalable startup businesses, funding should be applied to standardized training and certification programs. Easily accessible low interest loan programs, like the Home Affordable Refinance Program (HARP), could be created for those who want to start and maintain small businesses. Tax and regulatory waivers instituted for the first five years after every business birth. As mentioned earlier, 79% of startups survive one-year, 50% five-years and 33% ten-years. Subsidies, loans and waivers would improve these percentages substantially, boost the economy and increase overall employment.

Conclusion. From a Jobenomics perspective, the difference between education and training is significant to U.S. workforce and small business development. Education is foundational and generally measured by tenure. Training is specific and measured by what one can do once completed. Educational degree-oriented programs are measured in years and are usually expensive. Training programs are often as short as weeks or months, and are relatively inexpensive. For people seeking careers, degree-oriented programs are usually the best choice. For the underprivileged, unskilled and poorly educated segment of society, certificate-oriented skills-based training provides the most effective path into the workforce. At the end-of-the-day, one must remember that jobs do not create jobs, businesses do, especially small businesses that employ 80% of all Americans and created 80% of all new jobs since the end of the Great Recession in 2009.

Jobenomics State and City Initiatives

Job creation and business creation go hand-in-hand. Jobs do not create jobs, businesses do, especially small businesses that currently employ the majority of all Americans and create the vast majority of all new jobs.

The way that government and big business can plan, manage and support small business and job creation is via community-based business incubators, business accelerators and business generators.

Business incubators tend to focus high-tech, silver bullet innovations that have extraordinary growth and employment potential. Business accelerators focus on expanding existing businesses in order to make them larger and more profitable. Many cities have business incubators, usually located at or around universities or technology parks, and business accelerators that are associated with mezzanine financing institutions. The Jobenomics business generator concept involves mass-producing small and self-employed business with emphasis on lower-tech but plentiful service-providing businesses at the base of America's socioeconomic pyramid with emphasis on minority-owned, women-owned, veteran-owned, and Generation Y/Z (new workforce entrants)-owned businesses.

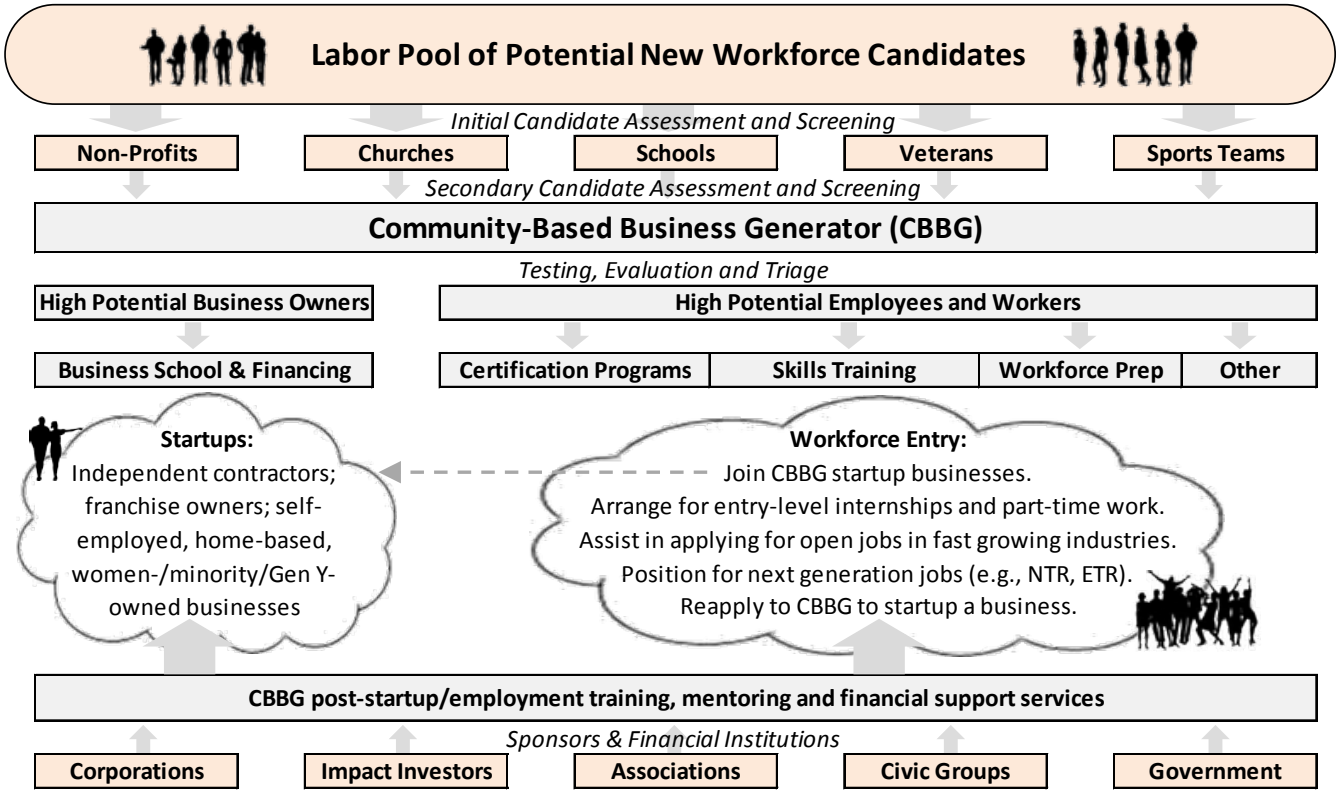
Jobenomics State & City Programs

Implementation Underway	**Community Leader(s)**
Jobenomics Erie Pennsylvania	Board Established
Jobenomics Workforce Reentry Program Phoenix	Mr. Doyle Davis
Plan Developed But Not Implemented	
Jobenomics Harlem	Rev. Michael Faulkner
Jobenomics West Baltimore	Rev. Dr. Al Hathaway
Jobenomics North Carolina	Mr. Joe Magno
Jobenomics Delaware	Mr. La Mar Gunn
In Discussion/Negotiation/Development	
Jobenomics Southern Maryland	Mr. Aurelio Azpiazu
Jobenomics Cincinnati	Mr. Uche Agomuo
Jobenomics Las Vegas	Col. (R) Steve Seroka
Jobenomics Charlotte North Carolina	Mr. Bob Johnson
Jobenomics Buffalo	Mr. Ron Clayton
Jobenomics California	Mr. John-Leslie Brown
Jobenomics Puerto Rico	Mr. Pierre Laguerre
Jobenomics Austin (Chicago)	Rev. Rob Stephenson

Numerous Jobenomics State and City programs are now underway as shown above with a number of other city, county, regional and state initiatives under discussion. Each of these programs incorporates Jobenomics Community-Based Business Generators as the way to mass-produce small and self-employed businesses as well as maximizing the number of jobs within targeted, often marginalized, communities. These community leaders are working with other community, government and business leaders to develop detailed plans, with actionable milestones, for citizens who desire meaningful jobs or want to start a business.

Jobenomics Community-Based Business Generator Concept. Jobenomics Community-Based Business Generators mass-produce highly-scalable startup businesses by: (1) working with community leaders to identify high-potential business owners and employees, (2) executing a due diligence process to identify potential high quality business leaders and employees, (3) training and certifying these leaders and employees in targeted occupations, (4) creating highly repeatable and highly scalable "turn-key" small and self-employed businesses, (5) establishing sources of startup funding, recurring funding and contracts to provide a consistent source of revenue for new businesses after incorporation, and (6) providing mentoring and back-office support services to extend the life span and profitability of businesses created by the Jobenomics Community-Based Business Generators.

Jobenomics Community-Based Business Generator Concept



The process starts by using community leaders to identify high-potential job seekers. Churches, non-profits, schools, sports teams and veterans groups are a great source for identifying talent, desire and fortitude. These organizations provide the first phase of the triage process by screening and assessing high performance people who are known to them. The second stage is accomplished during onboarding that involves Jobenomics screening and assessing. The third stage uses aptitude and personality tests to determine potential career paths.

Once completed, candidates will be separated into a business leadership group or a high potential employee group for training. The leadership group will undergo management and startup business training. The employee group will undergo skills training based on the role that they will assume in the startup business (operational, technical, mechanical, financial, marketing, administrative, etc.).

After the training is completed and certifications awarded, the team will commence startup operations under the guidance and assistance of the Business Generator team.

Jobenomics Community-Based Business Generator Process

A Unique Community-Based Business And Workforce Development Process

Starting with a notional labor pool of thousands of potential candidates, Jobenomics will work with local civic organizations identify, nominate and endorse in writing the highest qualified candidates for entry into the Jobenomics Community-Based Business Generator program. This is the first stage of the due diligence and selection process.

These nominees will then be subjected to standard aptitude and attitude tests in order to identify and assist (1) those that should be sent to other educational (GED and postsecondary) or training (vocational) centers for career development, (2) those that are qualified and suitable for immediate employment with existing companies, and (3) those that have an aptitude for starting a small or self-employed business. Jobenomics Community-Based Business Generator will help all people who enter the program to find meaningful employment.

Jobenomics envisions that 25% of the nominees would seek a traditional education and training path, 25% would be hired directly by existing business who are looking for quality workers, and 50% would seek a more independent and self-sufficient route offered by a small business startup or self-employment. Of the 50% that choose the Jobenomics Community-Based Business Generator training and certification process, Jobenomics anticipates that only one-quarter of these individuals will eventually implement a small business startup or incorporate as a self-employed business.

The three-quarters that undergo but do complete Jobenomics Community-Based Business Generator process will be certified (with empirical data by professional testing and evaluation) as high-quality candidates for immediate employment or traditional education/vocational training. Anticipating this eventuality, Jobenomics has “pipeline” to connect individuals who have undergone some level of due

diligence to companies that are hiring or anticipate future employment vacancies. The Jobenomics pipeline system has been operational for years with the Department of Defense and facilitated the hiring of 250,000 veterans.

The Jobenomics process focuses on preparing workers for starting a business, whether they actually start a business or use the experience to be more competitive to get a job. In today's world, gainful employment is difficult and oriented to those that are currently employed, credentialed or highly-skilled. Conversely, a common complaint that Jobenomics often hears from companies is that they have a very hard time (1) finding good people who want to work, (2) who have the right attitudes and aptitude for work, and (3) who have workforce credentials, experience or related skills.

Every nominee that enters the Jobenomics process will start a self-employed business, which can be incorporated in a matter of weeks, and undergo elementary business training. The reason for setting up a small business is to make them more competitive in today's job market. Many employers prefer to "try before they buy." An incorporated self-employed individual can position themselves for subcontract or contingent work (1099) as a prelude to standard full-time work (W2). Even if a self-employed individual never receives an income as a self-employed business, that individual can present themselves with credentials (Employer ID Number, website, business card and skills resume) that better prepares and aligns them with the business community. In addition, Jobenomics will provide additional credentials regarding the individual's workforce aptitude, skills and suitability tailored to the specific hiring opportunity. Jobenomics credentialing, along with letters of recommendation from the nominees' sponsoring organization, will greatly distinguish the individual from the masses of unemployed, new or returning workforce entrants.

Today, the United States does not have standardized national, state or local processes to create or mass-produce startup businesses. The U.S. startup process is largely ad hoc. By instituting a community-based (all jobs are local) standardized, repeatable and scalable process to mass-produce startup businesses, millions of new establishments could be created across America. By being part of a small business team, team members will be motivated to grow the business in order to make it more profitable, which facilitates upward mobility, higher wages, better benefits, potential equity positions, and, perhaps most importantly, a sense of camaraderie and purpose.

Job creation is the number one issue facing the U.S. in regard to economic growth, sustainment and prosperity. Jobs do not create jobs, businesses do, especially small businesses that currently employ 80% of all Americans and created 80% of all new jobs since the end of the Great Recession.

Unfortunately, America is focused on big business and government employment solutions that have not been very effective growing the U.S. labor force. In fact, the U.S. labor force is in a state of decline as evidenced by the eroding middle-class and the transformation from standard full-time to part-time and contingency workers. With the next fifteen years, Jobenomics forecasts that the contingent workforce will replace traditional full-time workforce as the dominant force of labor in the United States—a trend that is largely unknown to policy-makers and the American public.

Jobenomics asserts that the four demographics with the highest need and growth potential include women, minorities, new workforce entrants, and the large cadre of financially distressed citizens who want to work or start a business. These demographics are ideally suited for accommodating the

growing contingent workforce and attracting new labor force entrants that often do not share the same employment dream of older generations.

Jobenomics believes that new small, emerging and self-employed businesses could create 20 million new jobs within a decade, if properly incentivized and supported. Notwithstanding filling the 6 million open U.S. jobs positions, the emerging Energy Technology Revolution (ETR) and the Network Technology Revolution (NTR) could create 20 million net new American jobs within a decade given proper leadership and support.

Using the Jobenomics Community-Based Business Generator process of mass-producing highly repeatable and scalable "turn-key" small and self-employed businesses, America writ large could create tens of millions of jobs that would transform the U.S. labor force, middle-class and economy as well as providing hope and jobs for marginalized urban and rural American communities.

From a Jobenomics perspective, understanding the difference between education and training is fundamental to U.S. labor force development. Education is foundational and generally measured by tenure. Training is specific and measured by what one can do once completed. Educational degree-oriented programs are measured in years and are usually expensive. Training programs are often as short as weeks or months, and are relatively inexpensive. For people seeking careers, degree-oriented programs are usually the best choice. For the underprivileged, unskilled and poorly educated segment of society, certificate-oriented technical skills-based training provides the most effective way to getting a good job, the first step towards a meaningful career.

The Hope Collection (http://thehopecollection.org/) is a strategic partner in the Jobenomics National Grassroots Movement for skills-based training and lifelong applied learning. Together the Jobenomics-Hope team is focused on providing skills-based training and certification programs for those at the bottom of America's socio-economic pyramid with special emphasis on inner-city contingency workers.

The Jobenomics Hope Collection team includes the leading, nationally-accredited, skills-based training and certification institutions in the United States. The Hope Collection's **9,000 online skills-based training and certification programs** are oriented to creating "careers within a year" in Health & Wellness, Performing and Fine Arts, Family Issues, Development & Housing, Technology/Energy/Communications, Faith Based Leadership, Education, Food & Nutrition. Accredited training & certification providers include nationally-recognized organizations including: 360Training (http://www.360training.com), ExpertRating (http://www.expertrating.com/), Lake Technical College (http://www.laketech.org/) and the American Institute of Small Business (http://www.ed2go.com/business) to deliver the Jobenomics Community-Based Business Generator skills-based training and certification programs.

The Hope Collection's cloud-based Virtual Value Interactive Network (VVIN, a data base management system) is used by tens of millions of people around the globe, managed by the Hope Resource & Research Center (www.RRCenter.org) and accessed free by Jobenomics members via Optimize My Life (http://www.optimizemylife.org/). Optimize My Life also provides a myriad of other free programs and coaching, education and marketplace services.

To reiterate, 40% of all American workers are in the contingent workforce. In the inner-cities across America, the percentage of contingency workers is much higher due to depressed industries and low-skilled workers. While Jobenomics-Hope training prepares and supplies workers to standard full-time employers, which are in short supply in most inner city communities, the main emphasis has to be on preparing workers for higher-paying non-core contingent work as skilled part-timers, consultants, free-lancers, self-employed businesses and independent contractors.

Today's changing global marketplace produces employees who can be business owners at the same time. Such an environment turns costs to cash, equity and donations that support the causes of their choice and pay for a government to secure and facilitate the environment for the common good. Through its high-tech virtual incubator and high-touch community centers, the Jobenomics Hope team is providing both a virtual and hands on network to facilitate the process. Each Jobenomics member will have access to proven tools to build their estates in concert with others who are doing the same, while funding the support systems to facilitate and sustain the community.

The Hope Resource & Research Center (HRRC) is a for-profit subsidiary of The Hope Collection that is supported by the VVIN data base, project management system that organizes and sustains “affinity groups” such as business owners, workers, veterans, first responders, extended families of each group, generational population groups (Baby Boomers, Millennials etc.), marginalized groups (ex-offenders, disabled, abused etc.) as well as geographical groups. The HRRC will provide both initial training as well as “lifelong applied training” that will update worker and business skills throughout their lifetime. The Community-Based Business Generator will provide local ICT (information, communications and technical) and hands-on support to the HRRC.

The Jobenomics Hope concept for lifelong applied learning, continuous career advancement and micro-business development incorporates a “duplex” micro-financing economic model for the contingent workforce and family members of the standard (full-time employed by corporations) workforce.

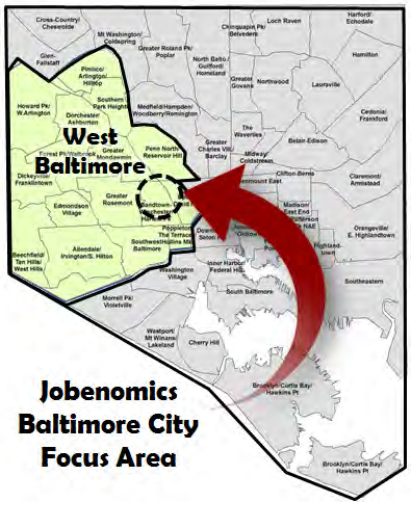
A duplex micro-financing economic model provides skilled-based training in multiple arenas that can then be incorporated for individuals and their family into an “S” Corporation/Family Limited Partnership structure. An S Corporation is a special type of corporation frequently used by self-employed and micro-businesses that allows shareholders to avoid double taxation by the IRS. Family Limited Partnership (FLPs) is type of partnership designed to centralize family business or investment accounts, and frequently used to move wealth from one generation to another. FLPs pool together a family's assets into one single family-owned business partnership in which family members own shares. As part of the Duplex, each person/family member’s S Corp can use the HRRC’s “e-Pantry in the Cloud” online shopping to convert purchases into a double digit tax-sheltered investment account. This investment account can be then reinvested into other equity-building opportunities (stock market, IRA/Keogh funds, insurance and charitable trusts, etc.) to build net worth as well as retirement and education accounts. To see a

short video on the duplex micro-financing economic model narrated by Joel Griffing can be accessed by clicking here.

Jobenomics West Baltimore. The Jobenomics Baltimore City initiative serves as a good example of what the Jobenomics National Grassroots Movement is trying to achieve with state and local communities via the implementation of the Jobenomics Community-Based Business Generator process.

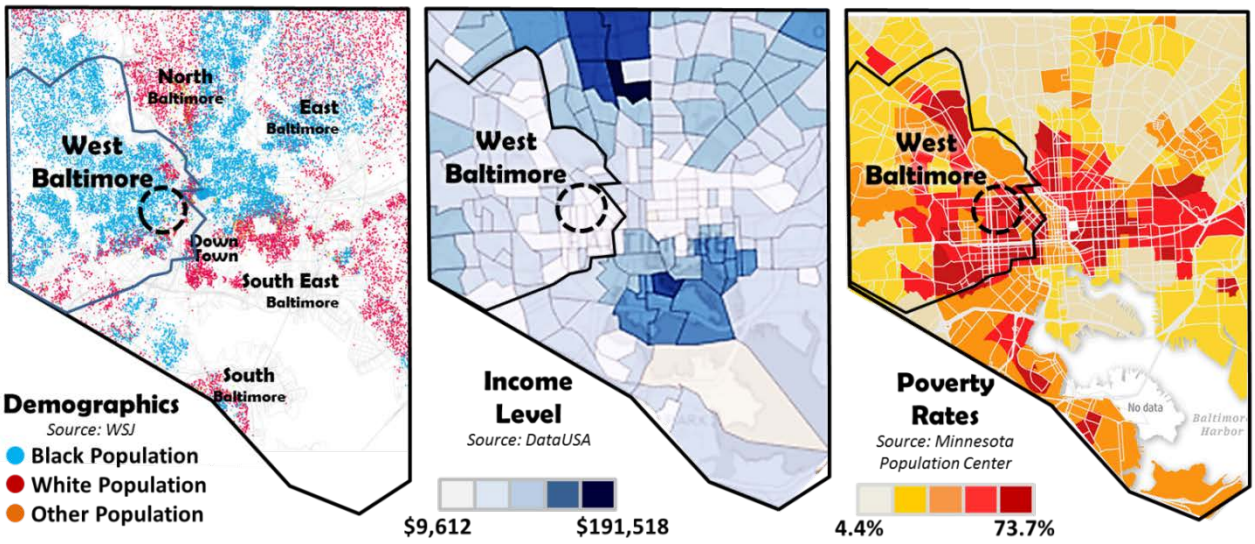
In April 2016, Jobenomics was contacted by Baltimore City leaders in regard to developing a potential Jobenomics Baltimore job creation initiative. After a few meetings, Jobenomics developed an initial framework for the Baltimore Metropolitan Area (MSA). In June 2016, Jobenomics and Baltimore City community leaders met with State and County economic development officials. The State of Maryland, Baltimore County and Baltimore suburbs are performing better than the national average in job creation, but Baltimore City (an independent city within the metropolitan area) is not. The consensus of the State and County economic development officials was that a priority must be given to areas with the highest potential for job creation, namely Baltimore suburbs with high skills and resources. By comparison, Baltimore City's urban labor force has lower skills with fewer resources. As a result of the June meeting, Jobenomics Baltimore was rewritten as Jobenomics West Baltimore focused on West Baltimore's most distressed neighborhoods—the area where Freddie Gray's death in police custody in 2015 fueled latent unrest into full-fledged riots and violence.

Over the next several months, these core community leaders are organizing seminars and meetings with other community leaders to discuss the Jobenomics West Baltimore plan and its initial business and job creation strategy. These community leaders will include state and local government officials, corporate executives, non-profit organizations as well as the new mayor's transition team that will be assembled after the election in November 2016 (several of the core community leaders are slated to be on the Mayor's Transition Team). Based on the result of these meetings Jobenomics will determine if there is reason to commence fund raising operations for pilot projects in Baltimore.



Based on Jobenomics West Baltimore's goal of restoring the labor force, Jobenomics analyzed Baltimore City labor force skills, major corporations and businesses within the city limits, current job openings and emerging business opportunities offered by the Energy and Network Technology Revolutions. The result of this analysis produced the following initial net new jobs framework which was enthusiastically endorsed by the half-dozen community leaders on the Jobenomics West Baltimore team. Creating 100,000 net new jobs by 2026 became the 2026 Jobenomics West Baltimore milestone with emphasis on minorities, women and new workforce entrants. Jobenomics West Baltimore business and job creation plan focuses on the poorest neighborhoods and expands outward in West Baltimore and then to the rest of City.

Demographic, Income & Poverty Statistics



The Jobenomics West Baltimore plan incorporates national, state, county, metropolitan, city and neighborhood statistics regarding demographic, economic, employment, unemployment, business, cultural, educational and job skill data unique to the Baltimore City workforce.

In 1950, Baltimore City's population topped out at 950,000, of whom 24% were Black. Today, the Baltimore City population is 632,000, of whom 64% are Black, 30% White and 6% Hispanic/Asian/Mixed. West Baltimore's population is 213,000 and overwhelmingly Black. By race and ethnicity, the 14 West Baltimore neighborhoods are 98%, 97%, 96%, 96%, 94%, 93%, 92%, 92%, 93%, 89%, 84%, 83%, 73% and 46% Black. Perhaps not surprisingly, the most mixed race neighborhood (46% Black, 39% White, 8% Asian, 4% Hispanic and 3% Mixed) was Freddie Gray's neighborhood.[189]

Baltimore City's median income levels, by neighborhood, range from a low of $9,612 to a high of $191,518. The national per capita income is $47,669. Maryland per capita income is $56,127. [190]

Approximately 60% of the adult working age population in the City is employed. Two-thirds of the employed personnel have jobs outside of Baltimore City due the lack jobs in the City.

The national average poverty rate is 14.8% and varies by family size. Maryland's average poverty rate is 10.0%. The Baltimore County poverty rate is 9.7%. The average Baltimore City poverty rate is 23.6%.[191] Baltimore City neighborhood poverty rates range from a low of 4.4% to a high of 73.5% in West Baltimore's predominantly Black neighborhoods.[192] The most common race or ethnicity living

[189] Statistical Atlas, Map of Race and Ethnicity by Neighborhood in Baltimore, Black, http://statisticalatlas.com/place/Maryland/Baltimore/Race-and-Ethnicity
[190] DataUSA, Baltimore City, MD, Income by Location, http://datausa.io/profile/geo/baltimore-city-md/#economy
[191] DataUSA, Baltimore City, MD, Poverty by Race & Ethnicity, http://datausa.io/profile/geo/baltimore-city-md/
[192] Wall Street Journal, WSJ analysis of U.S. Census Bureau data via Minnesota Population Center of the University of Minnesota, Diversity Index, http://graphics.wsj.com/baltimore-demographics/

below the poverty line in Baltimore City is Black (104,000), followed by White (26,000) and Hispanics (6,000). Females, age 25 to 34 (12,900), are the largest single demographic living in poverty.[193]

The percent of female-headed households with children under 18 in Baltimore City averaged 55% of all households. In some areas of the city (such as Cherry Hill, Upton and Druid Heights—a walkable 8-block distance from the proposed Jobenomics West Baltimore Operations Center), the percentage is as high as 77.4% for all female-headed households.[194] The percentage of single minority female-headed households is likely to be even higher.

Low income levels coupled with high poverty leads to high crime. Baltimore City ranks within the top 20 most dangerous cities in America. Violent crime rate is one of the highest in the nation, across communities of all sizes (both large and small). The chance of a person being a victim of a violent crime (murder and non-negligent manslaughter, armed robbery, aggravated assault and rape) is 1 in 73. The chance of a person being a victim of a violent crime or property crime (burglary, larceny, motor vehicle theft and arson) is 1 in 16.[195]

Based on statistical research, neighborhood tours and meetings with West Baltimore community leaders, the Jobenomics West Baltimore team agreed to an overall goal of restoring Baltimore City's labor force, which would go a long way to increasing incomes, alleviating poverty and reducing crime.

Jobenomics West Baltimore Employment History

In January 1990, the City had 459,100 jobs. By May 2016, the City had 369,900—loss of 89,200 jobs since 1990 and a loss of 4,400 over the previous decade.[196]

The Jobenomics West Baltimore team decided on an employment goal of 100,000 net new inner-city jobs by 2026, which would slightly exceed the City's 1990 employment level. The team also agreed on the principle that jobs do not create jobs, businesses do, especially small businesses that can support the needs of the local community. Consequently, it was decided that the Jobenomics West

[193] DataUSA, Baltimore City, MD, Poverty by Race & Ethnicity, http://datausa.io/profile/geo/baltimore-city-md/
[194] Baltimore Neighborhood Indicators Alliance-Jacob France Institute at the University of Baltimore, Census Demographics (2010-2014), Percent of Female-Headed Households with Children under 18 (2010), http://bniajfi.org/vital_signs/data_downloads/
[195] Neighborhood Scout, Crime rates for Baltimore, MD (analysis of FBI data), http://www.neighborhoodscout.com/md/baltimore/crime/#description/
[196] U.S. Bureau of Labor Statistics, Baltimore Area Employment – March 2016, http://www.bls.gov/regions/mid-atlantic/news-release/AreaEmployment_Baltimore.htm

Baltimore's small business creation effort should focus primarily on minority, women and new workforce entrants—the demographics with the highest need and potential in West Baltimore and the City at large.

100,000 net new jobs is an aggressive but achievable goal for a city with a population of 621,000 and an employed workforce of 369,900. 100,000 new workers will increase the employed workforce by 27% over the next decade, or 2.7%, per year. 2.7% is aggressive but achievable if focused on high growth occupations. Most of Jobenomics targeted occupations are forecast by the U.S. Department of Labor to grow faster than 2.7% per year over the next decade. Home health, nursing, occupational and physical therapy jobs are all projected to grow over 3.0% per year. Trainers, construction workers, counseling, computer, medical assistant jobs are projected to grow up to 2.9% per year.[197] These projections are based on a business-as-usual approach. The Jobenomics approach is much more aggressive with a standardized skills-based training process targeted at local high growth business and employment initiatives. If the Jobenomics West Baltimore plan is successfully implemented, population decay should reverse itself upward and employment increase.

Baltimore City does not lack human resources to fulfill the Jobenomics West Baltimore plan. Over the next decade, a large percentage of the City's 96,000 new workforce entrants, now aged 6 to 18, will enter the workforce ready for meaningful jobs and careers. A high percentage of Baltimore City's 62,000 unemployed who are looking for work may be able to finally land a job, the right job. A reasonable percentage of Baltimore City's 182,000 able-bodied adults who are no longer looking for work may decide to change their minds. Jobenomics Community-Based Business Generators will work with established educational and training organizations to add an extra dimension to workforce and business development for these new workforce entrants, the unemployed and underemployed, as well as the discouraged, underutilized and sidelined nonworking adults. In addition, the Generators will assist unfulfilled workers who are dissatisfied with their current job, retrain to find employment opportunities more fulfilling.

Jobenomics West Baltimore initiatives include a number of interesting new next-generation and socially conscious job opportunities that should be able to attract 25,000 to 50,000 from outside the City. Since the end of the 2007 -2009 Great Recession, Millennials (now numbering 75.4 million people) have reversed the migration from urban to suburb and are seeking socially-conscious and interesting employment opportunities.

Kevin Plank, the CEO of Under Armour, is looking for such people—10,000 of them to work in his new 4-million-square-foot headquarters on 266 acres in the Port Covington district of Baltimore City. Plank and other community leaders like him want to transform Baltimore as a model and destination city. While the Jobenomics West Baltimore plan is not likely to be involved in Under Armours' direct hiring, it will help develop new business and high quality employees for Under Armour's indirect workforce that is projected to be five times as large (30,000 jobs). The Jobenomics West Baltimore team will work with One Baltimore, Visit Baltimore, Innovation Village, BLocal and Baltimore Tourism

[197] U.S. Bureau of Labor Statistics,, Occupational Outlook Handbook, Growth Rate (Projected), http://www.bls.gov/ooh/

to develop businesses tailored to making Baltimore City a model destination city. A 25% increase in tourism alone will create 20,000 new jobs.

Given these new opportunities, untapped labor force resources, community support and help from above, the goal of 100,000 net new jobs by 2026 is a very achievable. In addition to jobs, if the Jobenomics Community-Based Business Generator is as successful as envisioned, it should be able to create as many as 2,000 new small businesses and significantly more self-employed businesses. The Plan also will provide post-startup support that will increase the lifespans of new business and support their growth into medium and large-sized businesses.

As of this writing, the Jobenomics West Baltimore plan has four major objectives, each with four sub-objectives. These objectives are specific to Baltimore according to the needs of the community as expressed by the current cadre of community leaders. As more community leaders join the initial cadre and commit themselves and their organizations, the plan's objectives/sub-objectives will be modified to meet their needs.

Jobenomics West Baltimore's Initial Net New Jobs Framework

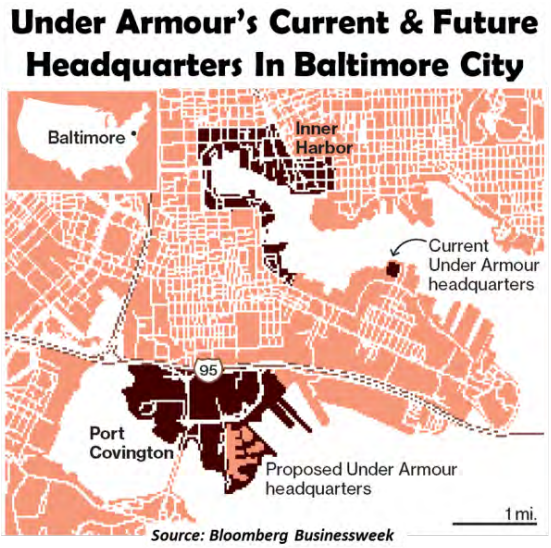
Industry/Occupation	Job Zone Skill Level	Jobs		Total Jobs	% of 100K Goal
		Direct (Est.)	Indirect (Est.)		
Manufacturing	**1-5**	**5,750**	**28,750**	**34,500**	**35%**
Under Armour	1-5	3,000	15,000	18,000	18%
Foreign (EB-5)	1-5	1,000	5,000	6,000	6%
Urban Mining	1-3	750	3,750	4,500	5%
Light Industrial	1-3	1,000	5,000	6,000	6%
Healthcare and Social Assistance	**1-4**	**6,375**	**19,125**	**25,500**	**26%**
Personal Care Aids	1-2	2,000	6,000	8,000	8%
Home Health Aids	1-2	2,000	6,000	8,000	8%
Nursing Assistances	1-2	2,000	6,000	8,000	8%
Direct-Care Center	1-4	375	1,125	1,500	2%
Demolition and Construction	**1-4**	**6,000**	**18,000**	**24,000**	**24%**
Demolition Labor	1	1,500	4,500	6,000	6%
Construction Labor	1-2	1,500	4,500	6,000	6%
Live-Baltimore/Retire-Baltimore	1-4	1,500	4,500	6,000	6%
Renewable Energy Initiative	1-4	1,500	4,500	6,000	6%
Digital Economy	**1-5**	**4,000**	**12,000**	**16,000**	**16%**
E-Commerce Self-Employed	1-4	2,000	6,000	8,000	8%
On Demand Work (e.g., Uber)	1-3	1,000	3,000	4,000	4%
E-Business Consultants	4-5	500	1,500	2,000	2%
Independent Contractors	3-5	500	1,500	2,000	2%
Total	**1-5**	**22,125**	**77,875**	**100,000**	**100%**

Out of the 100,000 net new jobs, 35% will be related to Manufacturing, 26% to Healthcare and Social Assistance, 24% to Demolition and Construction and 16% to the emerging Digital Economy. Both direct and indirect jobs are listed. Direct jobs are actual full-time positions created by business. Indirect jobs are created by other businesses that come into existence due to the economic growth provided by direct employment. Jobenomics uses a direct/indirect ratio of 1:5 for goods-producing businesses and 1:3 for service-providing businesses. Job skill zone levels are also listed.

Manufacturing. The first objective is to restore the Baltimore manufacturing labor force by adding 34,500 jobs (5,750 direct and 28,750 indirect). While Jobenomics does not view manufacturing as a major contributor to net new job creation in America (mainly due foreign competition and automation), Baltimore City is an exception.

Baltimore was a major war production center in World War II replete with steel, shipyards and aircraft manufacturing plants. After WWII, Baltimore lost 100,000 jobs in manufacturing alone. Today, the Baltimore region's manufacturing workforce is about 5% of the labor force compared to 30% in the heydays of the 1950s.

Baltimore City has a rich history of manufacturing. Consequently, it makes it easier politically, publically and culturally to accept major manufacturing initiatives. While only 5% of the workforce, Baltimore still has 100 operational manufacturing companies including major manufacturers like Northrup Grumman (aerospace, defense and information technology), Under Armour (apparel), McCormick & Co. Inc. (food products), BD Diagnostic Systems (medical devices) and AAI (unmanned systems) that employ approximately 15,000 direct employees in the metro area. The City is also replete with adequate, but aging, manufacturing infrastructure and a Tier 2/3 subcontractor manufacturing base. Despite all their challenges, Baltimore City citizens are eager and willing to work as evidenced by extremely large queues of Baltimoreans at job fairs. Most importantly, Baltimore City has a major manufacturing champion, Kevin Plank the CEO of Under Armour, who is personally committed to Baltimore City labor force restoration with next generation jobs and financing to make these jobs a reality.



Kevin Plank was featured on the cover of the 28 June 2016 edition of Bloomberg Businessweek pledging to "jump-start Baltimore".[198] Baltimore City is Plank's "adopted city" and he is committed to providing jobs in Baltimore City in preference to exporting these jobs outside the City as well as abroad. In January 2016, Under Armour announced plans to build a 4 million square foot headquarters, employing 10,000 direct employees, on 266 acres that Plank had acquired in the Port Covington district of Baltimore City. In addition to the new Under Armour headquarters, according to Under Armour's plan, "Port Covington will be home to 7,500 housing units, a hotel, shopping, and two light-rail stops". Plank's master plan also includes 13 million square feet of offices, 13,500 homes, stores and restaurants, and 42 acres of parks. In June 2016, the City's Planning Commission unanimously approved the master plan that can be obtained at this footnoted website[199].

[198] Bloomberg Businessweek, Under Armour's Quest to Dethrone Nike and Jump-Start Baltimore, by Rachel Monroe, 28 June 2016, http://www.bloomberg.com/features/2016-under-armour-kevin-plank/

[199] Under Armour, Presentation to the Urban Design & Architecture Review Panel, 28 January 2016, http://technical.ly/baltimore/wp-content/uploads/sites/3/2016/02/012816-UDARP-UA-Global-HQ.pdf

The Jobenomics West Baltimore team intends to work with Under Armour (and other likeminded corporate executives) to help develop Under Armour's indirect workforce that is estimated to be five-times the size of the direct workforce with emphasis on minority-owned business, and training and certified lower skilled workers.

The indirect workforce will be drawn from the local community, trained and certified by the business generators to mass-produce small service-providing businesses in areas like transportation, accommodation, food and beverage, retail (convenience stores, salons, barber shops, etc.) and other indirect services businesses. In regard to Under Armour's Tier 2/3 subcontractor manufacturing base, the Jobenomics plan calls for attracting domestic and international textile, information/network technology, commercial/residential development, and renewable energy firms to help meet the needs of Under Armour as well as new and expanding Tier 2/3 firms.

In addition to the above, Jobenomics is working with local officials on an Urban Mining initiative. Urban mining is defined as a process of reclaiming raw materials and metals from municipal waste streams including construction and demolition material, municipal solid waste, electronic waste and tires. These waste streams contain combustible and non-combustible materials. Combustibles are carbon-based matter that has caloric value that can be converted to marketable products via waste-to-organic and energy via waste-to-energy technologies. Non-combustible elements can be reclaimed via waste-to-material technology. Urban mining offers a number of benefits including reclamation of valuable raw materials and metals that can be sold as commodities or used for local manufacturing applications, reducing the impact on landfills and exporting of toxic waste, mitigating environmental pollution associated with traditional surface and subsurface mining operations, and producing revenue for local business and job creation.

Jobenomics West Baltimore's Net New Job Framework is tailored to the demographics of Baltimore City. Emphasis is being given to lower skill zones that tend to be more predominant in the poor sections of the inner-city. To date, the Jobenomics West Baltimore plan has been endorsed and led by community leaders who are now obtaining endorsements and support from corporate executives, government officials, opinion leaders and non-profit organizations, all of whom will be involved in the finalization and implementation of an actionable Jobenomics West Baltimore plan.

Healthcare and Social Assistance. The second objective is to enhance Baltimore City's healthcare and social assistance labor force by mass-producing small and self-employed direct-care businesses in order to create 25,500 net new jobs (6,375 direct and 19,125 indirect).

So far this decade (January 2010 to July 2016), the U.S. Healthcare and Social Assistance sector added 2,640,000 jobs—the largest sector of the thirteen labor sectors in the United States. Over the next decade, the U.S. Department of Labor projects 3.8 million new U.S. healthcare and social assistance jobs, or 40% of all new U.S. jobs, which is twice the amount of the next fastest growing sector.[200] Over the same time period, the Maryland Department of Labor projects 435,000 new healthcare-

[200] BLS, Employment Projections (2014-2924), Table 2. Employment by major industry sector, http://www.bls.gov/news.release/ecopro.t02.htm

related jobs, second only to government growth of 500,000 workers, and 45,000 new social assistance-related jobs.[201] Creating the Jobenomics plan to create 6,375 direct healthcare and social assistance jobs in Baltimore City by 2026 is a very small fraction of the 435,000 projected new Maryland healthcare jobs when Baltimore City is the hub for Maryland regional medical services.

Seven of the top ten major employers in Baltimore City are involved with healthcare. These esteemed Tier 1 corporations include: John Hopkins Hospital, University of Maryland Medical System, MedStar, LifeBridge, Mercy Health, St. Agnes and Kennedy Krieger Institute. Each of these employers has Tier 2/3 firms involved in healthcare. Jobenomics West Baltimore plan is create a "Tier 4" cadre of small and self-employed healthcare businesses that can work as independent contractors or be acquired by higher tier corporations.

The Jobenomics Baltimore Plan also calls for creation of a Direct-Care Center as part of an overall Direct-Care Initiative focused on healthcare, eldercare and childcare. A Direct-Care Initiative would provide in-home services from local small, micro and self-employed businesses managed by community-based direct-care centers equipped with the latest information systems connected to a network replete with real-time teleconferencing and mobile phone direct-care apps.

A number of factors are expected to lead to job growth in direct-care technology development as well as direct-care business and job creation: (1) growing population, (2) longer life expectancy, (3) chronic and age-related disease growth, (4) improved service-providing technology and (5) increasingly generous healthcare, social assistance and welfare programs.

Today, direct-care jobs are primarily funded through public funds. A direct-care initiative, designed around a community information and coordination center, could be largely paid by clients who need some assistance to retire at home or working families who can't afford the high cost of daycare.

According to the Bureau of Labor Statistics, in-home personal care service sector is projected to increase by 1.3 million jobs (a 70% growth rate compared to 14% for all U.S. occupations) from 2010 to 2020 with a median pay of approximately $20,000. While $20,000 is well below the $33,000 median pay for all occupations, it is attractive to new workforce entrants, retirees who need supplemental income and contingent workers who often work multiple part-time jobs as a matter of choice.

Community-based direct-care centers will also help establish and manage home-based healthcare, eldercare and childcare businesses. By 2020, assisted-living facilities are projected to have a 17 million bed shortfall for aging and disabled baby boomers—in-home eldercare services by home-based caregivers could solve the assisted-living shortfall. Today, only 8% of childcare arrangements are conducted in a caregiver's own home. This percentage could be expanded significantly and safely if managed by a Direct-Care Center. Affordable childcare is a major issue for female-headed households in Baltimore City and nearby suburbs.

[201] Maryland Department of Labor, Maryland Long Term Occupational Projections (2014 - 2024), https://www.dllr.state.md.us/lmi/iandoproj/maryland.shtml

Mass-producing self-employed, home-based childcare businesses that are safely managed could have significant impact on homebound mothers. More mothers could have home-based childcare businesses to supplement their income. More mothers could be emancipated from the home to pursue other occupational pursuits. The requisite childcare skills are natural for mothers who are or have raised children. Jobenomics believes that mothers should be afforded the opportunity to monetize these skills. Micro and self-employed businesses are ideally suited to provide direct-care, either on full-time or part-time basis. These businesses are relatively easy to start.

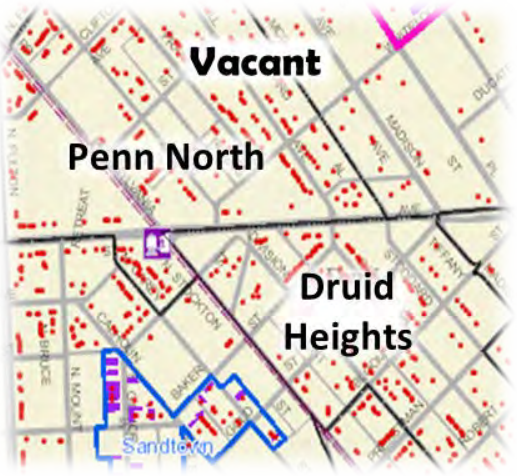
The principal role for government (federal, state and/or local) would be to fast-track policies, regulations and licensing arrangements conducive to in-home care by small and self-employed businesses. Today, the regulatory environment is so burdensome only larger companies can provide the full range of direct-care services. Small and self-employed businesses could provide basic in-home services that would not require extensive regulation and licensing. If teenage babysitters do not need government licensing, why should adults that want to start a self-employed business?

In addition to training and certifying basic caregiving skills, a Direct-Care Center would provide proper regulatory oversight and quality control. The Direct-Care Center would also work with larger established businesses that provide services higher up the skills chain. Small and self-employed businesses can provide basic services at a lower cost than larger businesses, which is extremely important to the elderly and parents who cannot afford the price of current caregiving services.

If Airbnb (a trusted community marketplace for people to list, discover, and book unique lodging accommodations around the world) can grow from zero to 500,000 homes in 34,000 cities in eight years, direct-care centers could implement home-based eldercare and childcare services in hundreds of thousands U.S. households in a relatively short period of time. By unleashing the power of new technology, like Airbnb did, it is not unreasonable to expect a quadrupling of the current in-home personal care employment growth rate. In Baltimore City, the net result could be thousands of net new jobs and microbusinesses for its most financially distressed demographic.

Demolition and Construction. The third objective is to restore the Baltimore construction labor force by adding 24,000 demolition and construction jobs (6,000 direct and 18,000 indirect).

Baltimore's plan to demolish tens of thousands of residential buildings and commercial properties could lead to tens of thousands of new jobs and businesses if properly planned. Baltimore City's Vacants to Values (V2B) program identifies for-sale vacant homes, commercial buildings, and lots that need to be demolished or refurbished.



According to V2B, population loss and other economic factors over the past 60 years have left Baltimore with

upwards of 17,000 vacant and boarded structures.[202] West Baltimore's Penn North and Druid Heights neighborhood vacancies are the red dots on the map. Based on location, population trends, and market demand, about 5,500 of vacant buildings have good potential for redevelopment. Market demand for the remaining 11,500, however, is very limited. These 11,500 properties are candidates for demolition. Under V2B, the Baltimore City commits $10 million per year in demolition funding, which is a good start. Much more funding could be obtained for developers to design and build planned residential communities as envisioned by Kevin Plank and likeminded social engineering architects.

According to Baltimore Neighborhood Indicators Alliance, Baltimore City owns 31,092 vacant properties but issued only 4,300 demolition permits due to limited funding.[203] An additional 5,492 properties are in the process of rehabilitation. Baltimore City has a total of 204,295 residential homes, many in need of repair and upgrading. In 2014, 7,822 homes were sold at a median sales price of $126,325, which is a very low price compared to other East Coast communities. If 100,000 new jobs were added to the workforce as envisioned by the Jobenomics West Baltimore plan, many thousands of demolition, renovation and construction jobs would be needed.

The Jobenomics West Baltimore plan recommends working with V2B to integrate the current demolition, renovation and construction efforts into a small business and job creation plan in association with Jobenomics Community-Based Businesses Generators. Jobenomics has identified a dozen related short (several weeks in duration) federally certified training programs that could quickly mass-produce startup businesses.

The Jobenomics West Baltimore team is working with the investment community to create a $100 million micro-business fund for demolition and construction related business startups. This fund would use the 30,000 derelict homes and properties owned by Baltimore City as collateral for the fund. This fund would be secured in ways similar to the federally-funded Home Affordable Refinance Program (created by the Federal Housing Finance Agency to help homeowners refinance their mortgage), Freddie Mac (a government owned enterprise created to buy U.S. home mortgages) and Ginnie Mae (a government owned enterprise created to help make affordable housing a reality for low- and moderate-income households).

Jobenomics also believes that HUD Section 3 financial assistance could be used to startup demolition, renovation and construction businesses. HUD Section 3 financial assistance is expended for housing or community development, targeted at public housing and low income residents and businesses. Section 3 is the legal basis for providing jobs for residents and awarding contracts to businesses needing financial assistance. [204] Properly orchestrated, HUD Section 3 could underwrite labor force restoration and business creation efforts in West Baltimore. To qualify for HUD Section 3 financing low income is defined as 80% or below the median income of the Baltimore metro and to qualify as a

[202] Vacants to Values, Demolition Site Maps, http://www.vacantstovalue.org/Developers.aspx#demomaps
[203] Baltimore Neighborhood Indicators Alliance-Jacob France Institute, Housing and Community Development (2010-2014), http://bniajfi.org/vital_signs/data_downloads/
[204] HUD.GOV, Section 3 Brochure, http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/section3/section3brochure

business at least 51% of the businesses must be owned by Section 3 residents. Both of these stipulations are easily met in West Baltimore.

The Jobenomics West Baltimore plan calls for the development of Live/Work/Play communities. Live/Work/Play consists of major new modern multilevel, multifaceted, high-tech, sustainable Live/Work/Play communities near the Inner Harbor, which would be a large draw for the Millennial Generation-Y and Generation-Z domestic and international college graduates entering the workforce.

Jobenomics is discussing the possibility of modifying the HUD Section 8 Housing Choice Voucher program to attract low income college graduates (most graduates do not have an income) to the City as opposed to paying poor inner-city residents to move to the suburbs.[205] Using these vouchers in this way would be of interest to developers and investors to build modern Live/Work/Play apartments and condos, as well as planned residential and retirement communities. Live/Work/Play communities would also be of interest to Under Armour for their future employees who would work at the Port Covington headquarters and campus. Under Armour plans to build two light rail stops and a water taxi to connect their employees to Downtown Baltimore and the Inner Harbor.

Jobenomics West Baltimore envisions incorporating Live Baltimore into the planned community process. Live Baltimore is a tax deductible non-profit that emphasizes Baltimore City's attractive features: sports, entertainment, low housing costs and other features of city living. Live Baltimore's target generation is Millennials—the largest U.S. demographic with 83 million people. This year, Millennials surpassed Baby Boomers and Generation X as the largest component in the U.S. labor force with 53.5 million workers. Jobenomics West Baltimore also envisions a Retire Baltimore initiative. Retire Baltimore would create low-cost, high-quality assisted-living and skilled-care retirement communities close to Baltimore's leading medical centers and staffed by locally trained and certified caregivers. The Direct-Care initiative will provide low cost services to Retire Baltimore. The ultimate goal is to make Baltimore City an attractive and affordable live/work/play/retire community for the upcoming Millennial and retiring Baby Boomer generations.

Digital Economy. The fourth objective is to enhance Baltimore City's labor force by adding 16,000 jobs (4,000 direct and 12,000 indirect) related to the emerging digital economy. The Digital Economy objective is likely to be the most important of all four objectives from a long-term point of view.
The U.S. economy is currently 95% traditional and 5% digital. The U.S. traditional economy is growing at approximately 2% per year and the digital economy is growing at 20% per year. If these growth rates continue, the digital economy would equate to ¼ of the U.S. economy by year 2026 and ½ by 2033. Consequently, it is essential that all U.S. communities prepare their digitally-oriented labor force for this explosive growth.

[205] Under the current Administration, the total number of voucher households has grown to more than 2.2 million. According the U.S. Department of Housing and Urban Development, the housing choice voucher program is the federal government's major program for assisting very low-income families, the elderly, and the disabled to afford decent, safe, and sanitary housing in the private market. Since housing assistance is provided on behalf of the family or individual, participants are able to find their own housing, including single-family homes, townhouses and apartments. Source: http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/hcv/about/fact_sheet

The emerging Digital Economy (also known as the Internet Economy, New Economy, Gig Economy Apps Economy, Uber Economy and Shared Economy) is transforming the planet via e-commerce, e-retailing, e-business, m(mobile)-commerce, h(health)-commerce as well as the Internet-of-Things. The Digital Economy will favor an independent home-based, self-employed, flexible and task-oriented part-time workforce over the traditional corporate full-time workforce. The Jobenomics West Baltimore plan will help to develop the digital infrastructure, training and business development to support the emerging digital economy and the ever-growing Baltimorean contingent workforce that is dependent on the web for task-oriented work.

To be economically robust, the Baltimore City economy depends on good jobs that reside inside city limits. In 2010, 54.2% of population worked outside of the City. In 2014, 67.1% did—a rise of 24% or 6% per year. The impact of the 2015 riots is yet unknown but many citizens believe that the exodus may worsen especially with Baltimore City's most talented and upcoming youngsters who are entering the workforce. This brain drain has to be reversed. Next-generation talent and skills must be retained in order for the Baltimore economy to grow. Since the digital economy is not geographically constrained, Baltimore's digital natives could work anywhere from home.

Compared to similar sized East Coast cities (Washington 659,000, Boston 659,000), Baltimore City employment opportunities are limited for the upcoming generation, known as Generation Z—born 1996 to present, now 21 years old and younger. Generation Zers are called "Screenagers" due to the amount of time they spend on the Internet and Smartphones. For the most part, Baltimore's Screenagers are digital natives just like all other digital natives across the world. Moreover, digital skills are largely taught during the 7 hours a day that these youngsters spend online. As the world's digital economy matures, Screenagers will be at the helm.

Baltimore City's Screenage population is 177,500 or 21% of the population. 67,000 screenagers, 15-21 years old, are now entering the workforce. The Jobenomics West Baltimore plan will help them prepare for entry as well as starting their own business. The digital economy offers standard and contingent career opportunities that are generally not suitable for older non-digital generations. 72% of surveyed American Screenagers want to start their own business. Baltimorean Screenagers are likely to feel the same. While much of this is wishful thinking, the digital economy will provide many of these Screenagers with opportunities that could make their wishes come true. A Jobenomics Community-Based Business Generator would significantly enhance the probability of success in this regard as well as productively pursuing self-interests and self-sufficiency.

Properly planned and structured, the digital economy will not only mitigate the brain drain leaving the city, but maintain indigenous Screenager talent. As discussed in the previous section, modern high-tech Live/Work/Play communities would also draw Screenage talent from outside the City. The fusion of inside and outside talent would constitute a formidable force for economic and workforce development in Baltimore City.

The Jobenomics West Baltimore plan also includes a Sharing/On-Demand Economy component. The Sharing/On-Demand Economy is a new wave of peer-to-peer, access-driven businesses that are characterized by (1) the ability of individuals to share (goods, knowledge, money, time, skills, content, etc.) rather than buy or own or (2) fulfill consumer demand via the immediate provisioning of goods

and services. In sharing, the trend is towards usage, as opposed to possession, of underused or idle assets. Consumers and entrepreneurs will be the greatest beneficiaries of the sharing economy. Such peer-to-peer sharing concepts can provide additional income for owners, while providing cheaper alternatives to consumers. For consumers, the sharing provides cheaper goods and services by quickly satisfying consumer needs via internet-connected applications.

With major business successes, like Uber and Airbnb, the sharing/on-demand economy is much more than a fad or trend. It is an emergent ecosystem that is upending mature business models across the globe. If successful, the sharing/on-demand economy is likely to usher in a transformation as significant as the personal computer did when it was introduced in the 1990s.

Shared-mobility is at the forefront of the new model of global, multi-modal, on-demand, share-mobility transformation that is currently taking place on five continents, in over 30 countries and in hundreds of cities. Shared-mobility offers an attractive alternative to owning (including fractional ownership) a vehicle as well as providing a meaningful alternative or supplement to conventional public transit systems. Car-sharing and personal vehicle-sharing applications can provide greatly needed low-cost services for the disabled, elderly and low-income groups. Leading ride-sharing and ride-hailing application providers include Uber, Lyft, Rideshare, Getaround, Rydes, Ridejoy, Carma and Zimride (Enterprise Rent-A-Car). Leading car-sharing providers include Zipcar (11,000 cars and 730,000 members), Enterprise Car Share, Hertz on Demand, Gar2go, City CarShare, Uber and Lyft.

Uber serves as an excellent example of a Jobenomics West Baltimore On-Demand/Shared-Mobility application. Each month Uber adds approximately 50,000 new drivers for each of its ride-hailing services: UberX (lowest cost fares), UberXL (larger cars and vans), UberSUV (SUVs seating up to six people), UberSELECT (entry-level luxury service) and UberBLACK (commercially registered and insured limos). Lesser known Uber ride-sharing and ride-hailing applications include UberPOOL (car and van pooling), UberESPAÑOL (UberX with a Spanish-speaking driver), UberTAXI (Uber app to hail a traditional taxi service), UberWAV/ACCESS/ASSIST (wheelchair-accessible and special-need vehicles with certified drivers), UberBIKE (Uber vehicles with a bike rack), UberRUSH (vehicles for custom and on-demand delivery of goods and service), UberHOP (flat fare rush hour ride-sharing) and UberLUX (luxury cars).[206]

In Washington DC, Uber is experimenting with an integrated metropolitan shared-mobility approach (UberDC) that combines UberTAXI with ride-sharing (UberPOOL) and ride-hailing (UberX, UberXL and UberSUV) services to reduce traffic congestion, emissions and costs as well producing new small businesses and jobs. The significance of UberDC should not be underestimated. If successful, UberDC could be a prototype for an integrated public shared-mobility transit system. The Jobenomics West Baltimore plan envisions an UberBaltimore initiative similar to UberDC with sponsorship from leading companies like Under Armour and the leading Baltimorean medical institutions.

[206] Uber, Newsroom, https://newsroom.uber.com/

The leading on-demand, shared-accommodation company is Airbnb. Other Airbnb-like companies include FlipKey (owned by travel giant TripAdvisor and offers over 30,000 rental listings in over 1100 cities), HomeAway (over 1 million worldwide listings), VRBO (Vacation Rentals by Owner with 800,000 listings in 100 countries), Roomorama (specializes in professionally-managed and trusted holiday homes, homestays and vacation rentals), Couchsurfing (offers rentals that foster cultural exchange), OneFineStay (handpicks extraordinary residential, loft and penthouse rentals), 9flats (specializes in alternatives to a hotel with 250,000 homes worldwide), Travelmob (specializes in matching travelers with hosts renting out villas and apartments for short- and long-term rentals) and Travelzoo (specializes in aggregating discounted accommodations and plots them on Google Map for last minute travelers).

Airbnb serves as an excellent example of a Jobenomics West Baltimore On-Demand/Shared-Accommodation application. Founded in 2008, Airbnb is a trusted community marketplace for people to list, discover and book online, via a mobile app, unique accommodations around the world. Airbnb has connected 60 million guests to unique travel experiences, at any price point, in more than 34,000 cities and 191 countries. As its name suggests (Airbnb derived its name from "airbed" and "bed and breakfast") 90% of Airbnb's bookings are pleasure and family oriented. 10% are business travel related.

Airbnb's economic impact has been phenomenal, especially for their accommodation providers (hosts). Using New York City as an example, Airbnb's serviced 400,000 visitors who generated $632 million in economic activity with $105 million in direct spending in the outer boroughs, in neighborhoods that don't typically benefit from tourism dollars. 87% of Airbnb New York City hosts typically earn $7,530 per year. Equally important, 62% of these hosts report that this additional income allows them to remain as homeowners as well staying in their own homes.[207]

The Jobenomics West Baltimore plan envisions working with Airbnb and other on-demand, shared-accommodation companies in regard to enhancing Baltimore's tourist industry and providing

Economic Impact to Baltimore. Jobenomics estimates that the economic impact would be **negative $5-$10 million** if the Jobenomics West Baltimore initiative proved to be unsuccessful after the initial pilot projects. On the other hand, if Maryland and Baltimore City community leaders embraced the concept and supported mass-producing small businesses and jobs, the economic impact could exceed **$6 billion per year**. 100,000 new jobs at an average salary of $50,000 are worth **$5 billion a year** to Baltimore City.

If companies, like Under Amour agreed to support the EB-5 foreign investment and manufacturing initiative, Baltimore City should benefit in numerous new startup businesses in textile- and wearable technology. Corporate support would also help justify developers and financial institutions to invest and build major new modern multilevel, multifaceted, sustainable Live/Work/Play communities near the Inner Harbor which would be a large draw for the Millennial Generation-Y and new Generation-Z domestic and international college graduates. These "digital natives" are flocking to modern high-

[207] Airbnb, About, https://www.airbnb.com/about/about-us, and Economic Impact, http://blog.airbnb.com/economic-impact-airbnb/

tech communal working areas with local personally, a sense of purpose, and 24/7 food/beverage/entertainment options. Other real estate investments in new green commercial buildings, residential communities and open spaces would be significant. An e-waste/e-scrap/e-demolition material reclamation facility could produce profits of up to $50 million per year, and potentially $200 million per year if Baltimore City can divert the exported e-waste stream from its container shipping facilities. Raw reclaimed materials (copper, aluminum, steel and plastics) could be used at cost for building industrial manufacturing plants in Baltimore. The total economic impact of these initiatives could be between **$500 million to $2 billion per year**.

Even a moderate Jobenomics West Baltimore success would receive national and international attention and vastly help improve Baltimore City as a "destination city" for tourism, vacations, sporting events and business conferences. According to Visit Baltimore[208], over 24.5 million domestic visitors and 1.8 million international visitors came to Baltimore City in 2014. The direct economic impact from visitor spending in 2014 was $5.2 billion spent on lodging, food/beverage, entertainment and transportation. The economic value of tourism beyond direct visitor spending included $2.7 billion in salaries (82,379 jobs; 56,919 directly employed and 25,460 indirectly employed) that were pumped back into the local economy, and approximately $0.5 billion that were collected as taxes and fees by the State and Baltimore City government. The total economic impact of tourism to Baltimore City was around $8 billion in 2014. If the Jobenomics West Baltimore helped improve Baltimore City as a "destination city" by 25%, the additional economic impact could be **$2 billion per year**.

If 40% (current percentage of the U.S. contingent labor force) of the 100,000 new jobs joined the contingent workforce and would become contingency workers (temporary workers, part-time workers, day laborers, self-employed, task-oriented workers, shared economy workers, independent contractors, consultants, freelancers). If half (20,000) of these workers were Jobenomics Community-Based Business Generator graduates, they would likely be part of a small business startup. If each startup contained 10 employees, **2,000 new small businesses** would be created.

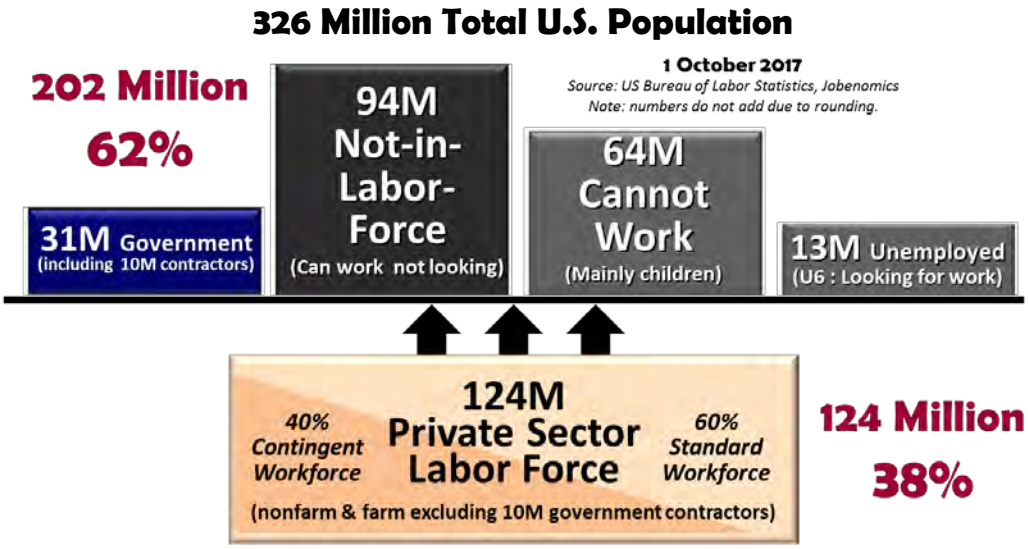
Concluding Thought. Whether the Jobenomics West Baltimore plan will be realized is too early to predict. Fulfillment will be only achieved when consensus is achieved by community leaders and a decision is made to commence with several pilot projects. Today, only one thing is for sure. In the short three months since inception, the Jobenomics West Baltimore plan has changed the Baltimorean workforce development dialog from a project-by-project approach to a more strategic small business and labor force development approach focused on developing skills for those at the bottom of Baltimore's economic hierarchy. The notion of creating 100,000 net new jobs by 2026 was initially received as whimsical. Based on reaction to the plan in its current incarnation, 100,000 net new jobs for Baltimore City is no longer a fanciful notion but an achievable possibility.

[208] Visit Baltimore, Annual Report And Business Plan Fiscal Years 2015–2016, http://baltimore.org/sites/default/master/files/pdf/ar_2015_final_web.pdf

Conclusion

Job creation is the number one issue facing the U.S. in regard to economic growth, sustainment and prosperity. Jobs do not create jobs, businesses do, especially small businesses that currently employ around 80% of all Americans and created up to 80% of all new jobs since the end of the Great Recession.

Unfortunately, America is focused on big business and government employment solutions that have not been very effective growing the U.S. labor force. In fact, the U.S. labor force is in a state of decline as evidenced by the eroding middle-class and the transformation from full-time to core contingency workers. With the next fifteen years, Jobenomics forecasts that the contingent workforce will replace traditional full-time workforce as the dominant force of labor in the United States—a trend that is largely unknown to U.S. policy-makers and the American public.



38% of all Americans financially support the rest of the country. As of 1 October 2017, out of a total U.S. population of 326 million, 124 million private sector workers support 31 million government workers and government contractors, 94 million able-bodied people who can work but chose not to work, 64 million who cannot work (at home caregivers, children, retired, institutionalized), and 13 million unemployed and underemployed.

The U.S. economy is not sustainable with only 38% supporting an overhead of 62%. The growing contingent labor force, which consists of mostly lower paid wage earners, makes the overhead burden even more precarious. More people with livable wages and greater discretionary income must be productively engaged in the private sector labor force for the U.S. economy to flourish.

The ever growing contingent labor force, which consists of mainly lower paid wage earners, makes the overhead burden of the private sector labor force even more precarious. More people with livable wages and greater discretionary income must be productively engaged in the private sector labor force for the U.S. economy to flourish.

Today, Jobenomics estimates the contingent workers (part-time, self-employed, independent contractors, temporary workers, on-call and day laborers with “alternative” or “nonstandard” work agreements) to be about 60,000,000 employed Americans or 40% of the total employed workforce (private sector and government). By 2030, this will rise to around 90,000,000, or 50%, of the total employed workforce.

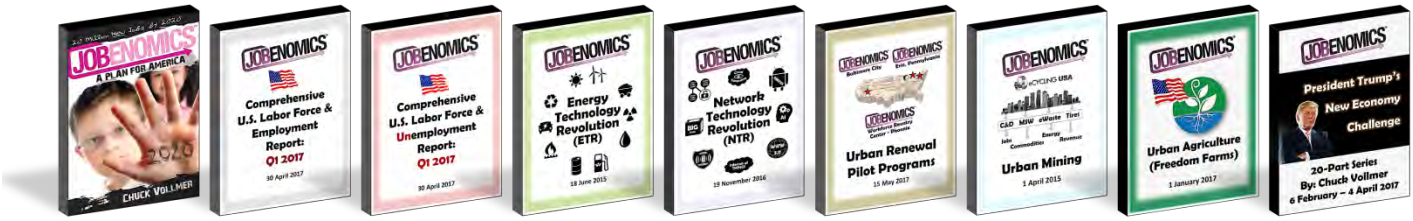
Jobenomics believes that new small, emerging and self-employed businesses could create 20 million new jobs within a decade, if properly incentivized and supported. Notwithstanding filling the 5.6 million open U.S. jobs positions, the emerging Energy Technology Revolution and the Network Technology Revolution could easily create 20 million net new American jobs within a decade given proper leadership and support.

To create this number of net new jobs, Jobenomics asserts that the four demographics with the highest need and growth potential include women, minorities, new workforce entrants, and the large cadre of financially distressed citizens who want to work or start a small business. These demographics are ideally suited for accommodating the growing contingent workforce and attracting new labor force entrants that often do not share the same employment dream of older generations.

Using the Jobenomics model of mass-producing highly repeatable and scalable “turn-key” small and self-employed businesses via community-based business generators, the United States could create tens of millions of jobs that would transform the American labor force, middle-class and economy.

About Jobenomics

Jobenomics *(Jobs + economics)* deals with the process of creating and mass-producing small businesses and jobs. Jobenomics National Grassroots Movement's goal is to facilitate creation of 20 million net new U.S. jobs within a decade. Over 20 million people have been reached by Jobenomics via its media, website and lectures, and has garnished wide-spread support for it economic development, workforce development and business development efforts. Jobenomics website and blog receives tens of thousands of page views each month with over half the viewers regularly spending over an hour of online research on the Jobenomics website.



Jobenomics regularly updates its nine books and e-books (shown above) to keep its members current on the latest national and international economic and labor force issues, trends and solutions. Jobenomics research is perhaps the most complete library of employment and unemployment challenges facing the nation and world. Jobenomics also provides special reports on national and international events that impact the economy. For example, as shown, these reports range from the U.S. workforce development challenge to international competition in the emerging digital economy to helping solve delicate labor force issues like discontent and extremism.

Jobenomics provides advice and timely data to policy and decision-makers worldwide. Over the last few years, Jobenomics met with over a thousand government, business and community leaders to incorporate the best of their ideas and requirements into Jobenomics initiatives and programs. Today, a dozen communities have started Jobenomics initiatives led by local community leaders. Another dozen are in the pipeline. These initiatives focus on citizens at the base of America's socioeconomic pyramid with emphasis on women, minorities, youth, veterans and other hopefuls who want to work or start a business. While Jobenomics is designed as an American business and job creation movement, there is significant interest from Asian, Middle East and African nations to start similar movements.

Key Focus Areas. While Jobenomics supports big business and government job creation efforts, its principal focus is on highly-scalable small and self-employed businesses that employ 80% of all Americans and produced 80% of all new jobs this decade. Jobenomics is working with numerous national organizations to implement Jobenomics Community-Based Business Generators to mass-produce startup businesses and provide skills-based training and certification programs to create "jobs within months and careers within a year." Via a strategic partnership with The Hope Collection (www.hopecollection.org), Jobenomics can offer over 9,000 online technical training and certification programs. Jobenomics partnership with EmeraldPlanet (www.EmeraldPlanet.org) includes

relationships with the world's 1,000 best emerging green business practices and Emerald Planet Television Show aired weekly worldwide. Jobenomics is also partnered with ACTS Freedom Farms (www.actsffa.com) produce 25,000 veteran-owned micro-farms, employing over 100,000 new U.S. jobs in the next five years. These micro-farms feature state-of-the-art hydroponic and vertical agricultural technology in a controlled environment to grow high-quality organic agricultural products in both urban and rural areas.

Contact Information: Charles D. (Chuck) Vollmer, Founder, Email: cvollmer@Jobenomics.com, Website: http://Jobenomics.com, Telephone: 703-319-2090, Office, P.O. Box 2182, Vienna, Virginia 22183.